

How to establish standards that ensure flexibility and interoperability. **See page 60**

Four packages let you log on to your PC from home or Waikiki Beach. **See page 72**

VOLUME 15, ISSUE 11

C Tools for Windows offers multiple virtual desktops for organizing work even on standard VGA monitors.

PC Tools for Windows, from Central Point Software Inc., eclipses any Windows shell I've used. In terms of efficiently controlling your files and applications, it shames Windows' standard Program and File Managers and is more flexible and powerful than Norton Desktop. Moreover, PC Tools'

Windows utilities are uniformly sharp — for everything from file viewing to undelete to disk and system optimization.

If you're a Norton Desktop for Windows user, which I was, Central Point's new entry lets you create a desktop that closely resembles the one you've cur-

See **FIRST LOOK**, page 108

BY JIM HAMMETT

Microsoft Corp. is expected to offer its MS-DOS 6.0 operating system at a special introductory price of less than \$80 when it is released late this month or early next month, sources close to the company said.

Microsoft officials initially quoted a price of \$77.95 for

DOS 6.0 during an interview last week about the company's "Upgrade Your World" reseller pricing promotion, which will run in April and May.

When questioned later, the company would only say that pricing for DOS has not been established and will be provided when its ship date is announced, sometime during the reseller promotion period.

Sources said the company will ship DOS 6.0 late this month for around \$20 less than its suggested retail price of \$99.95.

Microsoft announced last week that it hopes to reach 28 million users by the end of the year. **See MS-DOS, page 107**

ORLANDO, Fla. — The next version of Windows will not need DOS, Microsoft Corp. said last week as it outlined new details of its system software plans to attendees of the company's Tech-Ed 93 conference here.

Windows 4, part of a project code-named Chicago, will replace Windows 3.1 for DOS in 1994 and become a complete, stand-alone operating system. Windows 4 will also integrate all the features now

in Windows for Workgroups and add 32-bit code support, the company said during the developers' conference.

Another project, code-named Cairo, will become the next major release of Windows NT in 1994. Cairo will add a more object-oriented graphical user interface, as well as a distributed object-oriented file system.

Cairo will let users retrieve information as objects rather than files — searching on attributes
See WINDOWS, page 107

BY STUART J. JOHNSTON

CARLSBAD, Calif. — As Windows NT's final end-user beta went to production last week, Microsoft Corp. renamed the high-end version and said it will bundle additional features into both the server and desktop ver-

sions of the new operating system.

The renamed version is called the NT Advanced Server, which Microsoft previously referred to as Windows NT with LAN Manager. It will include Remote Access and Macintosh gateway services at no extra

cost, said Dwayne Walker, director of marketing for NT and networking products, at the Windows Summit conference here.

NT could ship to customers later than the promised date of June 30, but no more than 30 days late, Walker said.

"We will ship Windows NT when it's great," Walker said. The desktop and server versions will ship simultaneously.

When released, the desktop version of NT will cost less than

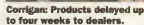
IBM, Apple, Compaq taking heat

BY ED SCANNELL

IBM, Apple Computer Inc., and Compaq Computer Corp. are backlogged with orders for their most popular systems, causing users to wait up to six weeks for shipments, the companies admitted last week.

Impatient users are considering other vendors, users and resellers told *InfoWorld* last week. But those who wish to buy from a top-tier company have no alternative but to wait.

See **BACKLOG**, page 107



BY TOM QUINLAN

A new bus architecture capable of supporting as much as 3.2 gigabytes of data at one time will debut this May when Apple Computer Inc., National Semiconductor Corp., and Beta Phase Inc. introduce the first sample components of their QuickRing technology at Apple's annual developers' conference.

Those components should provide Macintosh users with the last piece they need to implement multimedia on the desktop, sources said.

By breaking down the band-
See **APPLE**, page 107

Get **TWO** great products for **ONE** unbelievable price

**"Paradox for Windows
will blow the socks off the
products out there now."**

—*Datamation*, February 1993

**"Quattro Pro for Windows
is a better spreadsheet than
Excel 4.0."**

—*BYTE*, Essential Guide to
Windows, 1992

Believe it! The new *Super Pack* from Borland is the ultimate database and spreadsheet combination. And for a limited time, it can be yours for only \$199⁹⁵. That's an incredible \$1,290 off the suggested retail price.

You get Paradox® for Windows, the easiest-to-use Window database. And Quattro® Pro for Windows, the most advanced and usable Windows spreadsheet. Together they are your best solution for managing and analyzing all your business data: sharing files easily and making use of common commands for ease of learning and use.

You can't afford to miss this special offer. The best Windows database *and* spreadsheet for one unbelievable price.

Borland
Power made easy

Limited-time offer.
Everyone qualifies!

\$199⁹⁵
Incredible
value of
~~\$1,290~~



90-day, money-back guarantee!

**See your dealer or call now,
1-800-336-6464, ext. 5412**

In Canada call, 1-800-461-3327.

NEWS

Compaq makes initial foray into crowded direct market

By STEVE POLLITZ

Users can now order products directly from Compaq Computer Corp. Last week, the company added a toll-free direct response sales organization to its existing value-added and retail channels.

Compaq's direct response operation, which will initially sell just a dozen of its product offerings, is a limited foray into territory dominated by competitors such as Dell Computer Corp. and Gateway 200.

Compaq said that it will start offering directly to customers two of its low-end Contura notebooks, six ProLinea desktop systems, four Deskpro systems, and one printer at prices "close" to those found in retail stores.

"We think customers will find

that price won't be a reason to switch sales channels [to the direct response route]," said Barbara Krumland, vice president of the new Compaq DirectPlus operation.

A Compaq reseller said most customers come to him for value-added services, and the direct sales operation will have little effect.

"I think [direct response] will affect us, but not significantly," said Morris Romick, owner of a MicroAge Computer franchise, in Carrollton, Texas.

"If Compaq isn't undercutting us on pricing, it won't make much difference because our major accounts come to us for what we can do for them," Romick said.

Compaq's Krumland said the program is aimed at companies with fewer than 200 workers

and could eventually account for between 7 and 10 percent of Compaq's sales.

"With other companies like Dell solidly established, this is going to be something of a catch-up game for Compaq," said Antoine Tristani, a market analyst for Southeast Capital Corp., located in Austin, Texas.

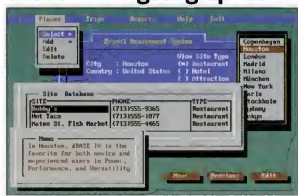
"But Compaq understands this market well and is likely to be quite aggressive," Tristani said. "Don't be surprised if they later start moving up into high-end systems."

Compaq will also offer 35 software packages over the toll-free line, 16 of them available on a pre-installed basis. A \$135 on-site service contract is also available.

Beginning March 22, Compaq DirectPlus will take orders at (800) 888-5858.

Product Spotlight

dBase IV 2.0 gets graphical



Borland International Inc.'s dBase IV 2.0, announced last week, offers increased speed and new language commands that let users add more graphical elements to dBase programs, including pop-up and drop-down menus, as seen here. Version 2.0 requires 1 megabyte of protected-mode memory. It costs \$795; registered users can upgrade for \$99.95 to stand-alone or LAN Pack versions. (800) 233-2444.

providing the glue holding it all together, Watkins said.

"If you look at Paradox, there are a lot of sophisticated event-driven technologies," Watkins said. "There are a lot of synergies between the products that can be enhanced." Watkins declined to comment about specific products that would come out of the division.

Bowing to the reality of the market, Watkins said Borland is eager to cooperate with companies such as Oracle, Informix, or Sybase to give users a choice of which server or client to use.

Analysts give the plan a fair chance of success, given Bor-

land's rank-and-file constituencies in the corporate world.

"Borland has an excellent chance to make it in the client side of the database market but a poor chance in the DBMS market," said Curt Monash of Monash Information Services, in New York.

Others pointed out that Borland may have trouble winning over MIS managers.

"The most difficult challenge will be to understand corporate MIS culture," said Mitchell Kertzman, CEO of Powersoft Corp. "It's a whole lot different than selling casual database applications."

AT DEADLINE

Intel readies a PCI local bus chip set for Pentium

Intel Corp. will unveil a PCI local bus chip set for the Pentium chip when the company introduces that processor March 22, said sources familiar with the company's plans. The PCI chip set for the Pentium will work with Pentium's 64-bit architecture and will be more expensive than the 486 PCI chip set, which is being sold in sample quantities now. Users can expect to see Pentium systems with PCI local bus by fall, if not earlier, sources said. Intel declined to comment on the unannounced products.

—Cate Corcoran

Intel, HP to offer network manager

Hewlett-Packard Co. and Intel Corp. announced at Interop in Washington last week that they will offer an integrated network management product. It will consist of Intel's LANDesk Manager software for managing desktop systems and HP's OpenView for Windows management platform for internets and workgroups. LANDesk/OpenView for Windows will provide integrated LAN administration functions under a single Microsoft Windows-based interface, including remote desktop management, network traffic and application monitoring, virus protection, and inventory management. LANDesk/OpenView for Windows, which will be available in June for \$1,995, supports NetWare, SNMP, and the upcoming Desktop Management Task Force's Desktop Management Interface.

—Torsen Busse

1-2-3 for Windows 2.0 in full beta

Lotus 1-2-3 for Windows 2.0, code-named Darwin, entered full beta testing last week and is set to begin shipping in the first half of this year. The product has been in small-scale preliminary beta since last November.

The product includes context-sensitive menus, a live status bar, drag-and-drop, in-cell editing, and improved drawing capabilities. It also includes intelligent charting, which enables users to highlight a range and have 1-2-3 format everything in the range.

—Doug Barney

Apple, Siemens combine PDA, phones

Apple Computer Inc. and Siemens Private Communication Systems Group announced last week plans to combine Newton technology with Siemens and Rolm telephones. Siemens will demonstrate its first product from the collaboration, NotePhone, at the CeBit Fair, in Hannover, Germany, on March 25. NotePhone will initially be a docking station for users to send Newton documents, said Derek van Bronkhorst, a Siemens representative.

Siemens and Rolm expect to provide NotePhones for standard analog telephone lines and for digital business communications systems sold by Siemens and Rolm, a Siemens company. Later, Siemens will provide wireless technology that will be embedded into Newton, van Bronkhorst said.

—Yvonne Lee

Paradox sales boost Borland profit

Better-than-expected sales of Paradox for Windows may help Borland International Inc. turn a profit this quarter after losing \$61 million last quarter, said Philippe Kahn, Borland CEO. "This may be the fastest turnaround in history," Kahn said. Speaking at the Windows Summit, in Carlsbad, Calif., Kahn also said that Quattro Pro for Windows 2.0 may be ready as early as this September.

—Shawn Willett

Borland, WordPerfect to offer suite

Borland International Inc. and WordPerfect Corp. will be offering a suite combining WordPerfect 5.2, Paradox for Windows, and Quattro Pro for Windows 2.0, said sources familiar with both companies. The companies already offer the combined package in Germany. Borland and WordPerfect are finalizing U.S. pricing and could announce the suite within a few weeks, the sources said.

—Shawn Willett



Distributed Thinking / Stewart Alsop

Contrarian analysis reveals that NetWare is not a network OS

Most users and industry folks now believe that Novell Inc.'s NetWare is a network operating system. Being a

contrarian by birth, heritage, and preference, I've been trying to analyze NetWare as something other than a network operating system. And it's worked: I've concluded that NetWare, by design, is not a network operating system, and Novell may be making a mistake (maybe a really big one) by trying to convert it into a network operating system.

First of all, a network operating system is software designed to allow applications to operate in a distributed environment with multiple host computers. There aren't any today. Host operating systems (MVS, VMS, OS/400, etc.) are designed as stand-alone systems that are supposed to manage large amounts of data being processed by large numbers of users directly attached to the processor. PC operating systems are designed to manage the use of one or more applications by a single individual. But neither has been designed specifically to manage the use of one or more applications cooperating on multiple, net-

worked servers.

A new generation of operating systems is being designed — or redesigned — specifically for networking. The first, arguably, is Solaris from SunSoft, which is based on Unix. SCO's Open Desktop is right behind Solaris. IBM's OS/2 is catching up fast. And Microsoft NT will join the race this year.

But NetWare? While the NetWare 4.0 introduction demonstration was impressive (even our Network Curmudgeon David Strom was impressed), NetWare is not an operating system. It was designed to provide file and print service directly to PCs in a workgroup and is only now acquiring the necessary features (distributed filing and hierarchies primarily) to be used for applications development. Memory protection is still an option, meaning that it is still possible to write programs that share memory with NetWare itself and potentially disrupt its operations. And the microkernel and object manager that will soon be featured in other operating systems are nowhere in sight for NetWare. (And why did Novell buy USL and Unix if it wasn't planning to use Unix as the underlying OS for a future version of NetWare?)

Novell is doing everything it needs to in order to become a credible OS company in terms of technology, customer support and service, third-party development and support, and even marketing. But is that what it should be doing? Novell is the world's largest marketer of a network application — a file and print service. Should it try to change the way it does business? Or should it instead try to find new kinds of applications to sell and expand its existing business?

E-MAIL UPDATE, TOO

Readers have been enormously helpful in solving my E-mail problems. One reader, Michael Davis, actually asked MCI Mail for help. (MCI Help's ID is 267-1163.) It's distressing that I was so focused on our network mail problem that I didn't think to do this myself.

Mr. Davis asked MCI Help about sending messages to ATTMAIL.COM or COMPUSERV.COM on the Internet. Response: "Messages from a for-profit E-mail service and bound for another for-profit E-mail service is a violation and not allowed. For this reason, you cannot send messages to ATTMAIL and Compuserve users through Internet via MCI Mail." So does MCI Mail classify Apple

Link, America Online, and Genie as not-for-profit E-mail services?

Davis also learned that MCI Mail has no restrictions on sending messages to the "MIL" domain on the Internet. So perhaps one of those readers who has had experience managing an Internet gateway could tell me what this means. I had a message returned by MailerDaemon @msa.usa.navy.mil with the following session transcript:

```
554 002508917@mcimail.com>...
Unbalanced
554 yz@math46>... Unbalanced ***
554 yz@math46>... Unbalanced ***
```

I have been able to reply to some MIL addresses (well, I didn't get a daemon mailer like the one above). But others have also reported a problem with sending messages to MIL addresses. I thought military addresses had some kind of unusual security associated with them, but that doesn't make a whole lot of sense. If anyone has knowledge on this subject, please send me a message at salsop@mcimail.com. (And perhaps my correspondent from the U.S. Naval Academy will recognize his native domain and know that I tried to reply!)

NEWS

The EISA subcommittee may replace the **EISA bus with a 64-bit bus**.....6

IBM, WordPerfect cooperate in development of productivity applications.....6

NetWare 4.0 makes big debut, but tools and applications lag behind.....8

An enhanced SNMP standard moved a step closer to adoption.....8

Isocor develops X.400-based document transfer.....8

Pacific Bell hooks up with Motorola for X.400 wireless messaging.....8

Vendors are shocked at predictions that software prices will continue falling.....12

SOFTWARE
Windows package Compel 1.0 makes full use of multimedia on-screen.....17

Vendors showed off Windows upgrades at the first Windows Summit.....17

Central Point reads its long-awaited PC Tools for Windows.....17

Metaphor offers front-end tools for its decision support product.....18

Realtime Vision instantly reports business data.....18

Indictments don't affect Symantec plans to move Gene Wang to the language development department.....24

HARDWARE

The FTC upheld the tariff on active matrix displays.....29

53 supports the Peripheral Component Interface, reads compliant chip.....29

QMS introduces a 45-page-per-minute network laser printer.....30

Two Poqet systems will ship in May 93.....31

Datasouth shows a small, 333-character-per-second dot-matrix printer.....34

NEC's UltraLite Versa notebook line features processors, cards, and screens that can be removed and upgraded.....34

Storage Solutions delivers the first 2-gigabyte, 3½-inch storage drive.....34

NETWORKING

Interphase adapters give users FDDI throughput rates over copper.....41

Xyplex said at Interop that it will link Ethernet networks to FDDI.....41

SynOptics products to integrate ATM into corporate backbone networks.....44

DEC offers Ethernet cards that double performance at half the price.....45

Cellular phones and modems will be built into PowerBooks.....48

The first British ISDN show featured multiplexers and cards.....48

ENTERPRISE COMPUTING

Setting corporate computing standards is a tricky balance of user needs and core business requirements.....60

MANAGEMENT

IS managers are often on the front lines in the battle to keep personal information private.....64

Alice LaPlante looks at an IBM facility downsizing to client/server.....65

Down to the Wire explores the joys of Unix CD-ROM drive installation.....68

REVIEWS

PRODUCT COMPARISON

That ghost in the machine is just a remote control software user. We put four packages through the paces.....72

REVIEWS

WordPerfect 5.2 for Windows.....88

PhotoMagic, Version 1.0.....92

TEST DRIVES

SuperATM font program.....106

Q-DOS Collection utility software.....109

Open EIS Pak Excel add-in.....109

MapLink for Windows Professional mapping software.....109



Netek One has a Mac look and feel.....29

COLUMNS

Window Manager / Brian Livingston.....26

Tech Talk / Steve Gibson.....38

LAN Talk / Paul Merenblom.....82

To the Editor.....64

From the Editor / Ed Foster.....55

Peer to Peer / Dr. Phillip Anderson.....55

From the Ether / Bob Metcalfe.....58

How to contact InfoWorld.....58

Help Desk / Brett Glass.....68

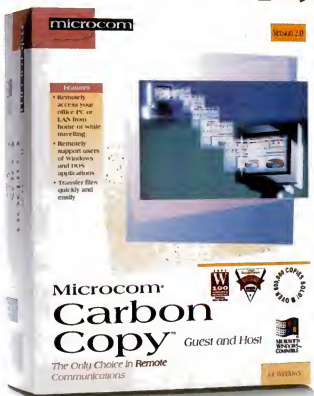
Civilized Computing / Cheryl Currid.....69

The Network Curmudgeon / David Strom.....69

One on One / Gordon Eubanks.....110

Notes From the Field / Robert X. Cringely.....110

Carbon Copy.



New Windows Version

Best Value

- **NEW!** Now supports Windows **and** DOS in one box
- **NEW!** LAN and Modem support in one box

Best Performance

- **NEW!** Fastest file transfer and remote screen updates

Easiest To Use

- Still the only true Windows graphical interface

The Only Choice.

When You Can't Always Be At The Office.

Use Carbon Copy to access your office PC and LAN from home or on the road.

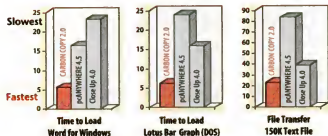
- Send and retrieve files
- Check your e-mail
- Use applications on your office PC remotely

When Your Customers Need You To Be There.

Use Carbon Copy to support your customers over modems or LANs.

- Support both Windows and DOS users
- Troubleshoot and train without leaving your desk
- Distribute software upgrades

Carbon Copy. The Only Choice in Remote Communications.



Performance measured in seconds using 9600 bps modems, 386/25 Host and 486/25 Guest.

"... the closest thing to having remote control built into Windows itself." - Windows Magazine

Visit your local dealer or call Microcom for the dealer nearest you. And find out why Carbon Copy is the only choice for over 800,000 users.



\$49 Upgrades! Now for a limited time, upgrade from any remote control software, including any version of Carbon Copy, to Carbon Copy for Windows 2.0 for only \$49. Call 1-800-765-1750 today.

Microcom's other PC connectivity products include: MicroPorte and QX high speed portable and desktop modems; Microcom Bridge/Router remote internetworking and LAN/Modem desktop management software.

800-822-8224

microcom®

Microcom, Inc. 500 River Ridge Drive, Norwood, MA 02062-5028
(617) 551-1000; Fax: (617) 551-1021; International Fax: (617) 551-1007

EISA group looks at 64-bit next-generation bus

BY TOM QUINLAN

The EISA subcommittee is considering a 64-bit replacement for the EISA bus that transfers multiple data packets faster than 200 megabytes per second.

The bus is expected to be introduced later this year with Pentium-based systems but may be configured to work with

existing ISA- and EISA-based systems as well, sources said.

The bus architecture would be backward compatible with ISA and EISA cards but would not be an upgrade to the EISA architecture, sources said. Instead, the bus would be designed as an asynchronous bus capable of handling streaming data such as digital video, which is

similar to Apple Computer Inc.'s QuickRing technology. (See story, page 1.)

The EISA bus was created by a consortium of nine companies, led by Compaq Computer Corp. The technology for the EISA upgrade is being developed by National Semiconductor Corp., the same company developing the chip set and controllers for Apple Computer Inc.'s

QuickRing architecture, sources said.

National's high-speed ECX bus would operate at speeds in excess of 300 MHz and would limit interference by creating multiple I/O channels that operate in parallel, sources said.

Sources within the EISA development community confirmed that the subcommittee is developing the next-generation bus, but they noted that using the National chip set could present some problems.

"It's very important to us that no one own the technology," said an executive for one EISA company. "That's one of the reasons why EISA was so successful originally."

A large part of Apple's QuickRing technology, which formed the basis for National's ECX project, is patentable, sources said.



IBM-WordPerfect deal could complete wordgroup suite

BY ED SCANNELL

IBM's programming systems unit and WordPerfect Corp. have signed a three-year joint development agreement to ensure WordPerfect works transparently across all IBM operating systems.

The agreement covers versions of WordPerfect that run under OS/2, Windows, DOS, and AIX.

The deal could also result in products that add the final pieces to a wordgroup suite made up of Lotus Development Corp.'s Notes and cc-Mail and IBM's Time and Place/2 LAN calendaring program.

Though IBM and WordPerfect officials downplayed the prospect of such a suite going up against Microsoft Corp.'s Windows for Workgroups, they did not shy away, either.

"These pieces make up the common functions users need for workgroups, like mail, calendaring, and word processing," said Kathy Butler, the programming systems division's director of office and publishing marketing.

The deal calls for the two companies to ensure "data interoperability" through several industry standards and open interfaces, including Vendor Independent Messaging (VIM) for message enabling, Notes, cc-Mail, and the recently announced Time and Place/2 all support VIM.

WordPerfect is expected to release WordPerfect for OS/2 5.2 shortly. It is a port of the Windows version. The company is working on WordPerfect for OS/2 6.0, expected to be released in the first quarter of 1994.

With our print server you'll use less paper.

Money may not be everything. But it sure is a good reason for you to buy our Pocket Ethernet Print Server. Not only is it faster than label, it's less expensive. It's also easier to work with. It plugs into the back of your printer with a minimum of effort. And it



can be easily connected anywhere on your network. In other words, you use less brainpower too. Give us a call at 1-800-957-7875 ext. 436 for the location of the Computerland nearest you. Because we would really hate to see you waste paper.

Xircom

Correction

The contact number for LANdesk in the chart "LAN administration tools," March 1, page 46 is incorrect. Intel can be reached at (800) 538-3373.



At just 11.5 x 9.5 x 2" and 5.5 lbs., the PanelBook is the smallest LCD panel ever, yet still has all the features.

Introducing the PanelBook™ 550 from In Focus Systems: An LCD panel should fill the room. Not your briefcase. That's why we developed the new PanelBook.

It's the smallest and most convenient LCD projection panel ever. Up to 90 percent smaller than most panels.

The next-generation active-matrix LCD panel. Keep the features. Lose the weight. With the new PanelBook, you

about the same size as much larger LCDs.

Inside, you'll find a drawer that expands the panel to full size. It also makes a handy place to store the wireless remote.

Another innovation from the leader in LCD technology.

In Focus Systems is the only company that offers a complete family of LCD projection



ANNOUNCING A VERY SMALL BREAKTHROUGH IN LCD PROJECTION TECHNOLOGY.

don't give up anything. It's fully featured with integrated data and video. So it projects everything from simple presentations to full-blown multimedia. In 1.4 million colors at 640 x 480 resolution.

For world travelers, the PanelBook supports NTSC, PAL and SECAM video standards and has a universal power supply.

As easy to use as it is to carry.

Setup is a snap. Just plug it into most any PC or Mac, and place it on an overhead. That's all there is to it.

The secret is in the drawer. How'd we make it so small? We started with a 9.4" LCD and an innovative design for the future. Unique optics project the PanelBook's image to

solutions for all your needs.

From low-cost black & white and color, to high-resolution



workstations and fully integrated projection systems. We also offer the LiteShow II, our exclusive presentation-management system.

Our new PanelBook just happens to be one of our biggest breakthroughs. Or would that be the smallest?

FOR MORE INFORMATION & A FREE PRESENTER'S IDEA GUIDE, CALL 1-800-327-7231.

InFocus®
S Y S T E M S



The competition's new laser printers were inspired by a distinguished history.

Ours.



*Another inspiration:
our new Print Accelerator
for Windows. 600 dpi printing
up to eight times faster,
with two-thirds less memory.*

Over a year ago,
IBM® LaserPrinters by
Lexmark were first with
affordable 600x600 dots-per-inch printing,
for razor-sharp output.

Our high-speed PC-to-printer connection
and compact footprint set industry standards.
Our wrinkle-free envelope printing and
made-in-America desktop laser engine
are still exclusives. Even our high-
yield cartridges mean extra value.

All these innovations come
from Lexmark—an independent,

worldwide company, formerly
a division of IBM, that brings
you IBM personal printers, IBM
typewriters, related supplies, and keyboards.

And now, we'll even help you fly
through Windows™—with a new, accelerated
Windows driver, for high-speed
600 dpi output.

To find a Lexmark
dealer, call
1 800 358-5835
(in Canada,
1 800 663-7662).



IBM Personal Printers by
LEXMARK.
Make Your Mark

Speed comparison vs. leading competitor. 486 PCs running graphics-intensive applications, tests conducted for Lexmark by National Software Testing Laboratories, Inc. MSRP IBM is a registered trademark of International Business Machines Corporation in the U.S. and other countries and is used under license. Windows is a trademark of Microsoft Corporation. Lexmark is a trademark of Lexmark International, Inc. ©1993 Lexmark International, Inc.

IBM LASERPRINTERS. PAGES AHEAD.

BROWN TROUT
aren't exactly an
endangered Species since Al's
decided he'd rather SPEND
MORE TIME *helping*
AST CUSTOMERS.

Presenting another river where the fish are leading safer lives. Thanks, in part, to AST employees who are rather obsessed with customer support. And these are the people you'll find manning our 24-hour, 7-day-a-week toll-free Technical Assistance Center. Question about hardware or software compatibility? Upgrading the i486™SX microprocessor on your AST Bravo desktop? Just call us. To ensure your call is answered promptly, our expert technicians use electronic message boards that display the wait-time of all incoming calls. Our passion for customer support spans the globe, too. In fact, you'll find AST-trained technicians in 100 countries. And you can bet that each one of them has a story or two about the fish that got away.

AST. COMPUTER
The Product Of Our Obsession.





SERVICE & SUPPORT

COVERAGE

*Available 3-year on-site warranty
for all desktops and network servers.
Available 3-year, 48-hour expedited
repair or 24-hour replacement
coverage for notebooks.*

SUPPORT

*24-hour, 7-day-a-week toll-free
telephone technical support.*
Call 800-727-4278.*

SERVICE

*Over 4600 AST-trained technicians
in over 1,400 U.S. locations.*

REFERENCE

*AST On-Line¹ is a worldwide
24-hour bulletin-board service.
Answers to any questions regarding
AST products, as well as AST
announcements and specifications,
are available via modem.*

FAX

*AST Info-FAX is a 24-hour fully
automated service that sends current
technical information on the latest
AST products to your fax machine.*

RESPONSIVE

*To discover how our obsession
with products and service can meet
your PC needs, call 800-876-4AST.*

RECREATIONAL

*Sage rod and reel, #5 line
and a grasshopper dry fly.
All optional, of course.*



Vendors dazed by predictions that software prices will plummet

BY SHAWN WILLET

SAN DIEGO — Software vendors got a rude shock at the Software Publishers Association conference here last week when several speakers predicted prices falling into the under-\$100 range permanently for almost all applications.

While the predictions seem like a boon for users, many vendors said the new

pricing models would force them to unbundle support and move to other cost-cutting measures.

"We see consumer software selling for \$10 to \$20 maximum and business software in the \$50-to-\$100 range," said Stephen Dukker, president of CompUSA's Compudyne division.

Speakers at the Software Publishers Association conference sessions included

analysts, retailers, and software vendors themselves.

Dukker, along with Gary Kusun, founder of Babbage's, a software retailer in Dallas, said software pricing would eventually follow the model of book or CD ROM publishers.

Software vendors and retailers agreed prices will continue to fall, but they heatedly disagreed with the book analogy.

"Business software like accounting is different," said Diane Bates, director of marketing at Peachtree Software Inc., in Norcross, Ga. "People use it over and over again. A set of encyclopedias would be a better model," she added.

Companies that make networking or application development software insisted they would be shielded from the price reductions because they add value to a company's information systems. But they, too, admitted prices would eventually fall to some degree.

"We are bought for different reasons than a spreadsheet, but we aren't immune to price pressures," said J. Booth Kalmbach, vice president of marketing at Pioneer Software Inc., based in Raleigh, N.C.

Others said research and development costs will make it hard for companies to charge rock-bottom prices.

"You can't afford to have 35 people working for three years on a product and then sell it for \$79.95," said David Watkins, director of product marketing at Borland International Inc.

In the future, the use of object code would bring down man-hours needed to come up with a new version, lowering the research and development overhead, Watkins added.

NEW PRACTICAL HIGH SPEED DATA/FAX MODEMS. SIZZLING PERFORMANCE! VERY COOL PRICES!



PM14400FXT V.32bis Mini Tower Stand-Alone Modem

- 14400 bps Data and 14400 bps Send/Receive FAX
- Supports Group III FAX Capabilities
- Super High-speed V.32bis protocol
- Quick Link II™ Data/FAX software included
- Hardware controlled V.42 error control; V.42bis data compression
- Measures just 1.2" x 2.3" x 4"
- Quick Link II™ Data/FAX software included
- Batteries and battery pack included
- Leather carrying case included!
- Compatible with Hayes' standard AT command set
- Lifetime Warranty
- Mac version with cable and software available at \$429.95

Just **\$399.**^{MSRP}

PM14400FX PKT Pocket Modem

- 14400 bps Data and 14400 bps Send/Receive FAX
- Supports Group III FAX Capabilities
- Super High-speed V.32bis protocol
- Hardware controlled V.42 error control; V.42bis data compression
- Measures just 1.2" x 2.3" x 4"
- Quick Link II™ Data/FAX software included
- Batteries and battery pack included
- Leather carrying case included!
- Compatible with Hayes' standard AT command set
- Lifetime Warranty
- Mac version with cable and software available at \$529.95

Just **\$499.**^{MSRP}

PM14400FX PS/2 Internal Modem

- 14400 bps Data and 14400 bps Send/Receive FAX
- Supports Group III FAX capabilities
- Super High-speed V.32bis protocol
- Hardware controlled V.42 error control; V.42bis data compression
- Quick Link II™ Data/FAX software included
- Specially designed for IBM PS/2 and compatibles
- Compatible with Hayes' standard AT command set
- Lifetime Warranty

Just **\$599.**^{MSRP}

PM9600FXT Mini Tower Stand-Alone Modem

- 9600 bps Data Transmission and 9600 bps Send/Receive FAX
- Supports Group III FAX capabilities
- Super High-speed V.32 protocol
- Quick Link II™ Data/FAX software included
- Hardware controlled V.42 error control; V.42bis data compression
- New design allows vertical or horizontal placement; stand included
- Compatible with Hayes' standard AT command set
- Lifetime Warranty
- PM9600FX Half-Card Modem available at \$299.95
- Mac version with cable and software available at \$349.95

Just **\$329.**^{MSRP}

If you're looking for communications performance that's really hot... and have to have cold, hard value, then take a good, long look at Practical Peripherals' high performance line. They're Data/FAX modems that give you superior "Made in the U.S.A." quality, incredibly reliable performance and unmatched value...all backed by a very impressive Lifetime Warranty!

It doesn't get any more Practical than that.



PRACTICAL PERIPHERALS®

375 Conejo Ridge Avenue, Thousand Oaks, CA 91361. Sales Office: 1-800-442-4774
Corporate Headquarters: 1-805-497-4774, Technical Support: 1-805-496-7707, FAX: 1-805-374-7200

PRACTICE/FAX

For information by FAX call (800) 225-4774.
Follow instructions when prices \$99.95.

* Batteries and battery packs are not covered by Lifetime Warranty. All products and names trademarked are properties of their respective manufacturers.
© 1993 Practical Peripherals, Inc. All rights reserved.

"You can't afford to have 35 people working for three years on a product and then sell it for \$79.95."

David Watkins

"Object code will only allow us to break even at the current rate," said Daniel Lunt, vice president of marketing at WordPerfect Corp.

An even bigger concern is support. "Support is our biggest cost," Lunt said. "The support model is going to have to change, which is hard for us because we built our reputation on responsive technical support."

Both Lunt and Borland president Philippe Kahn said in speeches a few days later at the Windows Summit conference in Carlsbad, Calif., that support may have to be unbundled (charged separately) at some point, if pricing trends continue.

Packaging may be one frill that is lost if software prices plummet, other vendors said.

Electronic distribution or distribution of both code and documentation on CD ROM is one way vendors say they can bring the cost of goods to the manufacturer down to \$3.

Currently, this form of distribution accounts for an extremely small percentage of sales, vendors admit.

"Software developers have to find a way to make their business profitable selling the product for \$30," said David Coursey, editor of PC Letter, in San Mateo, Calif. "One thing they have to do is sell a lot. Another is to have product ties like Quicken."

**THE MOST
POWERFUL
UPGRADE
EVER FOR
HARVARD
GRAPHICS.**

ANNOUNCING WORDPERFECT® PRESENTATIONS.

An easier, faster way to create world-class presentations is here. And the big news is it isn't from Harvard.

It's new WordPerfect® Presentations. Available now for DOS and very soon for Windows.

Under the bold headline "Harvard Beware,"



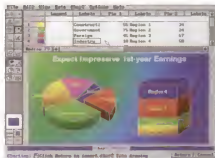
Our graphical interface brings Windows-like ease to DOS. And since our Windows version is almost identical, there's no learning curve if you move up.

PC World (9/92) says our DOS version is "as much like Windows as DOS gets. Even industry leader

Harvard Graphics for DOS doesn't

look as graphical or as slick." *PC Computing (12/92)* raves that Presentations "outdoes most Windows programs not only in the usefulness and breadth of its features, but also in its graphical interface."

Incidentally, both our Windows and DOS versions work almost exactly alike. Making it painless to move over. And to make it even easier, a free Windows license is included with your DOS purchase.



Unlike other programs, you don't have to navigate back and forth between the data input screen and your chart. With the Split Screen Editor, changing the data on top instantly changes the chart below.



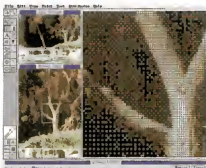
With a single point and click, the Button Bar™ lets you do things that take multiple keystrokes in Harvard. And you can even customize the Button Bar with powerful editing tools.

Why We Sound So Much Better Than Harvard.

We offer sound and music capabilities you won't find in any other presentation software. Including support for 20 popular sound cards and a library of more than a hundred MIDI music files.

Can We Paint You A Picture?

Harvard and Freelance can't. WordPerfect Presentations



No other DOS - or Windows - presentation software includes paint tools. Create your own color scanned images - or edit scanned images with ease.

So you can quickly edit lines and curves. Over 1,000 clip art images are included, each of which can be customized using Presentations' sophisticated editing tools.

Create Slide Shows Automatically.

With our Outliner, you don't have to be creative to create a slide show. Just type in your information - or import an outline from WordPerfect - and it puts your

is the only presentation program for DOS that includes paint tools. And the only one that gives you the ability to

convert bit-map images into the

vector format. So you can quickly edit lines and curves. Over 1,000 clip art images are included, each of which can be customized using Presentations' sophisticated editing tools.

Create Slide Shows Automatically.

With our Outliner, you don't have to be creative to create a slide show. Just type in your information - or import an outline from WordPerfect - and it puts your

text in order onto slides. And there are many more exclusive features. So many, that we've decided to give

you 90 days to try

them all out risk-

free. Owners of Harvard, Freelance and other competitive products also qualify for a special \$129 trade-up price.

Plus everybody is entitled to WordPerfect's legendary toll-free support.

Take A Free Test-Drive.

To try WordPerfect Presentations before you buy, just call (800)526-2291 for a free working copy. Or call for



our quick and simple Demo Disk instead. Do it now. And see why the most powerful upgrade ever to Harvard or any graphics package could only come from WordPerfect.



The unique Slide Sorter puts all your slides on screen and lets you rearrange them with a click and a drag. And with the Slide Editor, you can zoom in close and make changes on any slide.

WordPerfect®



In Your Quest To Upgrade Technology, Don't Overlook The Most Important Upgrade Of All.

You've invested a bundle in personal computer hardware and software, thinking it would pay off in higher productivity. But has it?

By the end of the '80s technology boom, productivity in American business was up less than 2%.

A pretty shocking figure. But not surprising when you realize most users are tapping only 10% of their computer's capabilities.

So before you pour more money into more powerful boxes and software upgrades, consider upgrading your people. Send them to ExecuTrain, the computer training leader. Independent



Studies of ExecuTrain clients show that just one day of training can improve productivity 30%.

research has shown that just one day of our instructor-led training can increase user productivity 30%. And at a fraction of the cost of your technology investment.

ExecuTrain training works because our instructors are first and foremost communicators, people who have a true talent and affinity for teaching. Our unique courseware presents simple concepts one at a time in plain English, not computerese. And classes are limited to about 10 students, so everyone gets the personal attention they need.

But our program doesn't end when class is over. With our unlimited free telephone support for students, an instructor is as close as the phone if a question comes up later about a subject covered in their course.



ExecuTrain instructors are experienced professionals who know how to communicate with students.

We offer more than 150 courses plus customized training on your proprietary software. And, because ExecuTrain has over 70 locations worldwide, we can tailor a program for one office or your entire organization. The best part: there's no risk. Every one of our courses comes with a money-back guarantee.

So how do you start getting your productivity payoff? Call today for your free People Upgrade package.



Additional ExecuTrain benefits include unlimited phone support for students and a money-back guarantee.

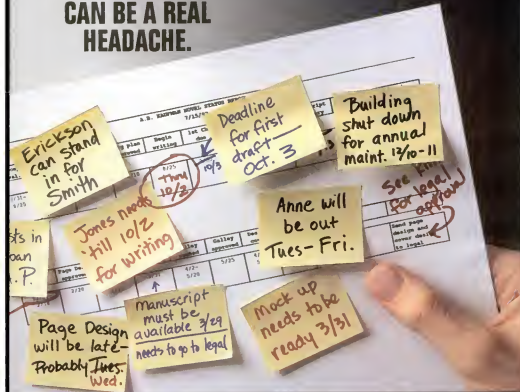


ExecuTrain.
The Computer Training Leader

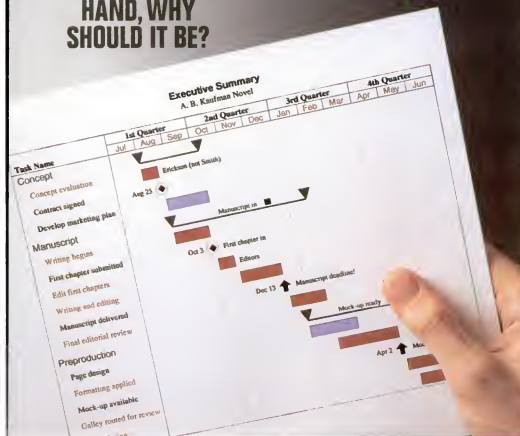
1-800-535-9479

We offer more than 150 courses, all with courseware that breaks down material into simple, easy-to-grasp concepts.

ON ONE HAND, PROJECT MANAGEMENT CAN BE A REAL HEADACHE.



ON THE OTHER HAND, WHY SHOULD IT BE?



You work hard enough planning your projects; why not let Microsoft® Project 3.0 for Windows® help you make it easier?

With clear graphs, you'll be able to see and communicate your project even better—from the tiny details to the big picture.

Changes? No problem. For every revision you make, Microsoft Project helps you see how it will affect the entire job.

Assigning a new job? Just click the People button. Want to know who's doing what, when? Microsoft Project can help you keep track of everyone.

And if you need to get off to a fast start, use PlanningWizards to guide you step by step. Soon, you'll have great-looking, easy-to-read reports that make all your plans perfectly clear.

You can even exchange files between Project on your PC and your Mac.* Either way, why not plan on the leading project management software? Microsoft Project 3.0 – it takes the pain out of planning.

Microsoft
Making it easier

For more information inside the 50 United States, call (800) 424-9400, Dept. JN2. Outside the U.S. and Canada, call (206) 936-8661. Customers in Canada, call (800) 563-9046. © 1993 Microsoft Corporation. All rights reserved. Printed in the USA. Microsoft is a registered trademark and Windows and the Windows logo are trademarks of Microsoft Corporation. Mac is a registered trademark of Apple Computer, Inc.



**THE MOST POWERFUL SOFTWARE IN THE WORLD
HAS BEEN LOCKED IN A BLACK BOX FOR OVER FIVE YEARS.**

NEWS / SOFTWARE

PIPELINE

ANNOUNCED

Microsoft prepares 32-bit compiler

Microsoft Corp. plans to release this month Fortran PowerStation 3.0, which comes with Visual Workbench, a Windows-hosted integrated development environment that lets developers move seamlessly between the Compiler, Editor, and Debugger. With PowerStation, developers can create 32-bit protected-mode DOS-based applications. It will retail for \$495; upgrades from previous versions of Fortran are \$199, and a competitive upgrade is available for \$249. (206) 882-8080.

Rational Systems Inc.

announced an upgrade to its DOS extender, DOS/16M. Version 5.0 supports Microsoft's C/C++ 7.0 and Visual C++, and Borland International's C/C++ 3.1. The DOS extender will be available next month priced at \$5,000. (508) 653-6006.

MathSoft Inc.'s Mathcad 4.0 for Windows features SmartMath, a rules-based processor that makes numeric and symbolic calculations faster and easier to use. It also includes support for 32-bit processing, extensive graphics, live symbols, and ease-of-use enhancements. It is set to ship by the end of the first quarter for \$495. Versions for Macintosh and Unix are planned. (617) 577-8829.

SHIPPED

Clientele now offers user customization

AnswerSet Corp.'s Clientele 2.7, a customer information management package, now enables users to customize the type and flow of customer information needed in each department via its distributed database. It adds support for hard-goods handling and special requirements for volume buyers and sellers. It lists for between \$1,495 and \$29,995; a limited version of the Extended Edition lists for between \$795 and \$9,995. (408) 996-8683.

Platinum Software Corp. ships today its first Windows module for its LAN-based accounting system, Platinum Publisher. The visual report generator works with Platinum to process queries across several databases to generate desktop publishing reports. Features include object-oriented design tools and integrated data dictionary access. It is available for \$1,995. (714) 727-1250.

Asymetrix readies Compel

Presentation package is tailored for multimedia

By STUART J. JOHNSTON
AND KELLEY DAMORE

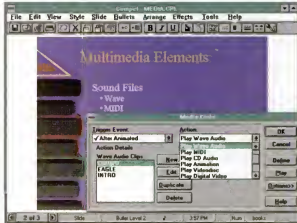
After two years as a major player in multimedia, Asymetrix Corp. aims to leverage that lead this month when it ships a presentation graphics package for Windows.

What sets Compel 1.0 apart from its competition — Harvard Graphics, Microsoft PowerPoint, and Aldus Persuasion for Windows — is that it was designed from scratch to make full use of multimedia on-screen, said Bert Kolde, executive vice president.

While users can generate all the standard output formats, such as 35mm color slides, overheads, and hard copy printouts, Compel's strengths lie in its capability to produce on-screen presentations. Kolde said.

The package features support for animation, Microsoft Corp.'s Video for Windows, videoclips, CD-quality and user-recorded audio, as well as Wave and Musical Instrument Digital Interface (MIDI) files.

In addition to the capability to run through a presentation from start to finish, Compel also has a hyperlinking feature that allows users to create on-screen buttons that let them jump to another point in the presentation. The hyperlinking feature also



Compel 1.0 has support for animation, and users can create color slides, hard-copy printouts, or on-screen presentations.

lets users jump to an altogether different presentation.

The package features charting and drawing tools, a slide sorter, 100 prebuilt slide templates, and a variety of ready-to-use effects. Compel includes a CD ROM disc that contains more than 100 megabytes of multimedia clips, including 200 sound files and 350 editable clip-art drawings.

In addition, Compel supports Microsoft's Object Linking and Embedding (OLE) 1.0 technology and the Windows Messaging Applications Programming Interface (MAPI), said Joe Re-

hfeld, director of marketing.

A royalty-free run-time module is included.

Compel is priced at \$295, but it will be priced at \$99 for the first 99 days after its release and will include a copy of Asymetrix's MediaBlitz 2.0 during that time. Competitive upgrades from other presentation graphics products cost \$99, and purchasers of Asymetrix's Multimedia Make Your Point can upgrade for \$49.

Asymetrix is located in Bellevue, Wash., and can be reached at (800) 448-6543.

Vendors unveil Windows upgrades

By SHAWN WILLET
AND STUART J. JOHNSTON

CARLSBAD, Calif. — Applications vendors last week showed new and upgraded Windows products at the first Windows Summit here.

Delrina Technology Inc. of Toronto debuted its FormFlow technology, a new feature in its PerformPro Plus forms package. The software routes and tracks forms using both Vendor Information Messaging (VIM) and Microsoft Corp.'s Messaging Applications Programming Interface (MAPI) protocol connections to electronic mail packages.

The company is working with Action Technology to add even more sophisticated forms tracking processes, according to Shelley Sofer, a Delrina representative.

Superbase, from Santa Clara, Calif.-based Software Publishing Corp., got a multimedia upgrade at the show with an

add-on feature called Video Player for Windows. The feature, which allows Digital Video-Interactive (DVI) video clips to be stored and displayed in a database, is being offered for a special \$15 price for the next two months.

Avantis Performance Systems demonstrated an update to its "people-oriented" ManagePro project management software, due out this summer. Network and groupware features are the main innovations of this version, said Norman Wu, president of the Emeryville, Calif.-based company.

Santa Monica, Calif.-based Symantec Corp. showed Q&A for Windows and its "Bedrock" cross-platform, object-oriented development environments. However, company officials would not disclose shipment dates or additional features.

WorldPerfect Corp. gave users a glimpse of its InForms forms processing software and said its long-awaited presentations

graphics package for Windows, WordPerfect Presentations 2.0, will support Microsoft Corp.'s Object Linking and Embedding (OLE) technology, TWAIN image acquisition, and direct CD ROM sound.

InForms, which will retail for \$495 for both the designer and filer modules, will ship in May. Presentations 2.0 is set for a summer delivery, said officials at the Orem, Utah company.

Concise Data Systems Inc. of Westborough, Mass., said it will ship in June two editions of R&R Report Writer for Windows, Version 2. The Xbase edition will continue to cost \$249, but the company did not announce pricing for the SQL database edition.

GOC Computers of Perry, Ohio, will ship this month its Personal Arc2 1.1 file management tool. The update costs \$189, and features include the capability to use existing applications on the PC as potential viewers for files.

CPS to offer PC Tools utility for Windows

By Ed Scannell

Scripted to be a logical extension of Windows, Central Point Software Inc. will deliver by month's end the long-awaited Windows version of its flagship product, PC Tools.

A direct competitor of The Norton Desktop for Windows, PC Tools for Windows is packaged as 14 separate modules that let users adapt its configuration to best match the way they work.

PC Tools for Windows provides a replacement for the much-maligned Windows File Manager and for the Windows Program Manager.

PC Tools enables users to set up multiple "virtual" desktops, said David Roux, senior vice president of marketing.

The virtual desktop feature — called MultiDesk — lets the user configure several different desktops, each with its own set of applications and the documents the user needs for a particular task.

The program's interface can be customized so that users can put together their most frequently used commands in a toolbar.

PC Tools for Windows can also view 80 different applications in their native formats — about twice the number found in the DOS versions.

Working from within Windows, users can schedule automatic repairs to common hard disk problems, including lost data clusters or file allocation tables.

Like the DOS-based versions, PC Tools for Windows has a disk optimizer that defragments hard disk space.

For a network use, the PC Tools for Windows supplies a multiuser database for administering shared and controlled Windows menuing over Novell Inc.'s NetWare, Microsoft Corp.'s LAN Manager, Banyan Systems Inc.'s Vines, and other networks.

The program requires at least a 386 processor with 4 megabytes of main memory and Windows 3.1 running in Enhanced Mode.

Scheduled for release this month, PC Tools for Windows will carry a suggested retail price of \$179.95.

Central Point Software, headquartered in Beaverton, Ore., can be reached at (503) 690-8090.

— Stuart J. Johnston contributed to this story.

Metaphor provides front-end tools for desktop interfaces

API allows lower end access to decision support

BY SCOTT MACE

Metaphor Inc., whose decision-support software requires powerful PCs running a proprietary interface, now has Windows, DOS, and OS/2-based front-end development tools.

Global Access for PC is an applications programming interface (API) that opens up Metaphor's Data Interpretation System (DIS) services to the typical desktop user.

DIS combines relational database technology with a suite of graphical software tools that let businesspeople gather and analyze data and transform it into useful information easily.

Developers can create custom interfaces to DIS and connect in a variety of ways ranging from

asynchronous to X.25. The APIs provided may be accessed with C programs or DOS batch files to build flexible solutions using a variety of application front ends, such as Visual Basic, Metaphor officials said.

Also required is Metaphor's Capsule Services, a batch execution service that lets local and remote DIS users offload processing of DIS applications, known as capsules, from a workstation to servers or other workstations on a DIS network.

Capsule Services lets DIS users run capsule applications from any full-function DIS or Global Access for PC desktop computers.

"We see Global Access as a means of delivering the power of DIS-based management infor-

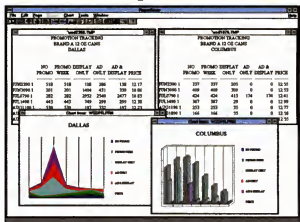
mation to field laptop PCs, typically for consumer products sales organizations," said Andrew Bean, CEO of Bean & Bean Consulting of Randolph, N.J. Global Access can be used to create DIS front ends for nontechnical users, he said.

Ease of use is only one attraction of Global Access, though.

"We see a major portion of the market targeted to mobile executives with intermittent connection to DIS," said Steve Crow, Metaphor's Access product manager.

DIS' pricing ranges from \$80,000 to \$100,000 for 10 to 20 users. DIS users need a 386 PC with 8 to 12 megabytes of RAM and XGA graphics.

Global Access and Capsule Services sell for \$27,000 to



The Windows front end to Metaphor's DIS product uses the Metaphor Global Access for PC API.

\$96,000 for 50 to 200 users. Typical Windows, OS/2, and DOS systems are supported.

Metaphor, based in Mountain View, Calif., can be reached at (800) 346-3824.

Iterated brings fractal images to all OLE apps

BY KELLEY DAMORE

Iterated Systems Inc., inventors of fractal compression, introduced a new version of a desktop publishing program that allows users to bring fractal images into applications that support Object Linking and Embedding.

Fractal compression is a scalable technology that stores images as mathematical equations rather than transforming the image into pixels. A 1-megabyte still image can be compressed between 10K and 15K using fractal compression, said officials of the Norcross, Ga.-based company.

Called Images Incorporated III, the desktop publishing package offers support for Iterated's compression band.

In addition, software and hardware compression can be performed in the background. "Fractal compression has enormous compression efficiency, and moreover, the [technology] is device independent," said Bill Caffrey, vice president and director of the advanced technology group for the Gartner Group, based in Stamford, Conn.

"It is one of the few [technologies] that I really see some important light [for] in the distance," Caffrey said.

Images Incorporated III is available now for \$299 from Iterated Systems.

Registered users of Version 2.0 can upgrade for \$95.

Iterated Systems can be reached at (404) 840-0633.

Realtime Vision may be business management's future

BY SCOTT MACE

Microsoft Windows could become the primary way to watch and control everything from stock purchases to factory-floor ovens and pumps with a new program from Labtech Corp.

Realtime Vision instantly collects and graphically displays constantly changing business and manufacturing data in real time through Windows' Dynamic Data Exchange facility.

The program converts data into trend charts, digital readouts, analog meters, and dials, allowing users to watch the data as it changes. Users can easily control these displays — and

even other programs and processes — using knobs, switches, buttons, and slides.

"Users of Realtime Vision are like pilots monitoring their airplanes via the control panel: checking speed, fuel, altitude, and so forth," said Fred Putnam, president of Labtech. "Except in this case it's a business administrator or process control manager tracking activities such as sales vs. inventory or factory line output."

Realtime Vision users have the speed in gathering and responding to information needed to operate an enterprise, Putnam added.

Available this month, Real-

time Vision is priced far less than competing data acquisition packages, Putnam said.

Realtime Vision also includes three sample applications: Database Vision, which reads dBase-compatible database files and graphically displays information; PC Vision, which graphically displays the load on your PC, including disk space and memory; and Network Vision, which graphically displays network file server response time.

"It is the simplest, slickest user interface I've seen so far [for real-time control]," said Bill Rose, president of Specter Technologies of Austin, Texas. Specter Technologies is de-

signing a companion product, Windows 911, which will use multimedia sound boards to make audible alarms triggered by real-time data.

Other potential uses of Realtime Vision include measuring production productivity, telephone call volume, response time to service requests, retail sales, or process control. The program can also update trend charts from data on mainframes by connecting to 3270 emulation software packages.

Realtime Vision is priced at \$995.

Labtech, based in Wilmington, Mass., can be reached at (508) 657-5400.

SparcWare compatibility program will cut ISV costs

BY JIM HAMMETT

Several Sparc International vendors announced a SparcWare compatibility program to reduce users' hardware and software costs and independent software vendors' support costs.

SparcWare is designed to evolve current Sparc-based applications to the Unix SVR4 operating system, according to Derek Meyer, director of Sparc marketing at Sun Microsystems.

SparcWare, originally a brand designation of Sun Microsystems Inc.'s Catalyst program, will now represent products that meet specifications to work with other Sparc hardware and software, Meyer said.

Products achieve SparcWare compliance by porting to a set of binary interface specifications

for SVR4 systems, called the Sparc Compliance Definition 2 (SCD2), created by Sparc International members, Meyer said.

SCD2 contains application-visible interfaces among platform providers and optional interfaces that may be supplied by only some vendors.

SCD2 documents interfaces such as SunSoft 2.x and the Futitux UXP/DS operating system.

By porting to a common set of binary interfaces rather than an operating system, vendors can provide applications that run on all compliant Sparc platforms, Meyer said.

SCD2 contains two technologies: a System Compliance Test to verify hardware and operating system compliance in SCD2, and Sparc Application Verifier to develop and test software.

Nisus updates word processor to understand 18 languages

BY JIM HAMMETT

Language enhancements in Nisus Software Inc.'s Nisus 3.4 for the Macintosh now give users a word processor that lets them mix as many as 18 languages within a single document.

The word processor takes advantage of all the languages available in the Mac WorldScript system, including languages that read right to left, such as Arabic and Hebrew, the company said.

Nisus 3.4 divides the available languages into two editions. Both editions include an English dictionary and thesaurus plus the user's choice of a foreign language dictionary for spell checking. Additional dictionaries can be ordered.

The Limited Flag Edition

3.4L operates under System 6.0.7 and later. It supports text entry in languages based on the Roman alphabet, including English, French, Finnish, German, Italian, Portuguese, and Spanish.

It also supports Japanese running under the Macintosh KanjiTalk operating system or System 7.1. The Limited Flag Edition retails for \$395.

The Nisus Complete Flag Edition 3.4C enables text entry in all the Limited Edition languages plus Arabic, Chinese, Czech, Farsi, Hebrew, Hungarian, Korean, Polish, Russian, and Thai. It requires System 7.0.1 or later and retails for \$495.

Nisus is located in Solana Beach, Calif., and can be reached at (619) 481-1477.

NeXT® computers have always been quite different. Not just because of their workstation power or sleek black design, but for the revolutionary software inside.

Our software is based upon an "object-oriented"

technology. This modular approach allows companies to create client/server applications that integrate with all their information resources. And do so in just a fraction of the time possible before.

This extraordinary software, called NeXTSTEP®, is our most valuable asset. Our customers often tell us it's the main reason they bought our computers. Or, even more pointedly, the *only* reason. They often express the wish that NeXTSTEP could be used more widely throughout their organizations on industry-standard Intel® computers.

Indeed the entire industry sees object-oriented technology as the future of computing. Not wanting to miss the "industrial revolution" of software, all the major companies are pursuing new systems.

Microsoft calls their project Cairo. It's their ultimate goal beyond Windows NT.™ Apple and IBM have jointly formed Taligent to develop a similar system. With any luck, their "beta" versions should begin to appear in about two years.

But our object-oriented NeXTSTEP software is here today. In fact, it's already in its third release, polished and perfected.

"Its NeXTSTEP system software is years ahead of its potential rivals, such as Microsoft Corp.'s Cairo and Apple and IBM's Taligent systems."

BUSINESS WEEK, JANUARY 25, 1993

software locked up inside our black box, or do we open it up to industry-standard platforms?

We've made our decision. Today, NeXT begins its transition



The concept of NeXTSTEP object-oriented software is simple. It allows applications to be built using pre-assembled, reusable software "objects," instead of the endless miles of complicated code required before.

TODAY, WE'RE LETTING IT OUT.

This presents NeXT with both an amazing opportunity and a very difficult choice. With such a large lead over our competitors, do we keep the world's only object-oriented

from a hardware company to a software company—dedicated to bringing the extraordinary advantages of object-oriented client/server software to mainstream business.

Though this transition will not be without pain, NeXT will emerge as a much more focused company, able to devote all its resources to achieving this single goal.

Our transition will culminate at NeXTWORLD® Expo in San Francisco on May 25th. At this time, we will ship our first shrink-wrapped NeXTSTEP products for industry-standard Intel 486 machines. The best-of-breed applications now available on NeXT computers will be ported to the Intel platform (a routine so simple, it rarely takes more than a day). And all developers of NeXTSTEP software will instantly have new access to a potentially vast mainstream market.

Our goal is to make NeXTSTEP the world's leading operating system—and a development tool that will

allow companies to create their own customized client/server applications for a unique competitive advantage.

The tens of thousands of people who are already reaping the benefits of NeXTSTEP—in banks and brokerage houses, in hospitals and forward-thinking organizations all over the world—believe NeXT will succeed.

That's because the window of opportunity is now wide open. The giants in the industry have already validated our technology. And for at least two years, we won't even have a competitor.

If you'd like to learn more about NeXTSTEP for Intel-based computers, we invite you to call us at 1-800-TRY-NeXT.

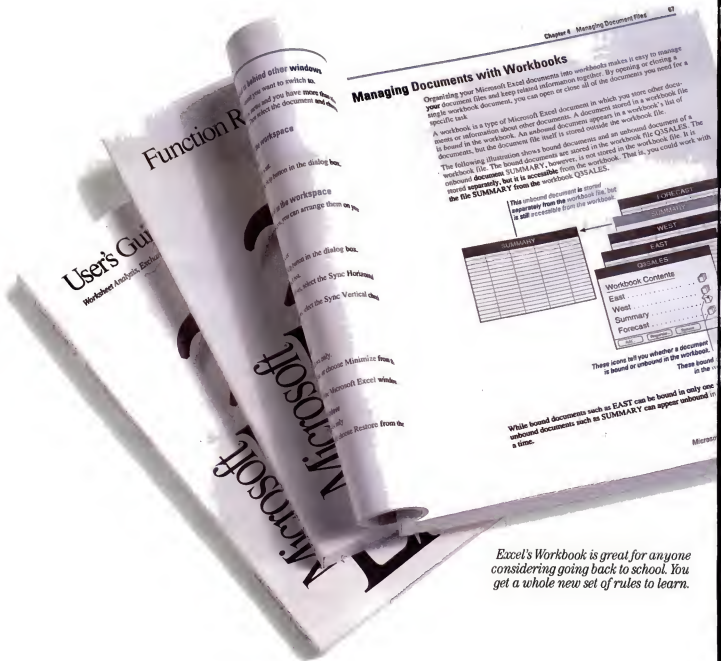


NeXTSTEP software brings the revolution of object-oriented software to mainstream business. Now commercial client/server applications can be created in literally a fraction of the time ever possible before.



THE OBJECT IS THE ADVANTAGE.™

People who choose instead of 1-2-3's 3



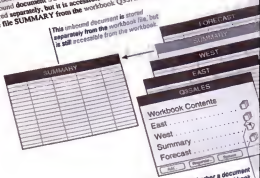
Managing Documents with Workbooks

Organizing your Microsoft Excel documents into workbooks makes it easy to manage your documents files and keep related information together. By opening or closing a single workbook document, you can open or close all of the documents you need for a specific task.

A workbook is a type of Microsoft Excel document in which you store other documents or information about other documents. A document stored in a workbook file is bound in the workbook. An unbound document appears in a workbook's list of documents, but the document file itself is stored outside the workbook file.

The following illustration shows bound documents and an unbound document of a workbook file. The bound documents are stored in the workbook file QSALES. The unbound document, SUMMARY, however, is not stored in the workbook file. It is stored separately, but it is accessible from the workbook. That is, you could work with the file SUMMARY from the workbook QSALES.

This unbound document is stored separately from the workbook file, but is still accessible from the workbook.



These icons tell you whether a document is bound or unbound in the workbook. These bound documents such as EAST can be bound in only one workbook. These unbound documents such as SUMMARY can appear unbound in any workbook at any time.

Excel's Workbook is great for anyone considering going back to school. You get a whole new set of rules to learn.

Excel's Workbook have a lot to learn.

The first thing they'll have to learn is an extensive set of new commands and procedures.

Because unlike 1-2-3's 3-D, which lets you work just like you do in 1-2-3's 2-D, Excel's Workbook has a whole new set of rules.

The second thing they'll learn is that Microsoft® Excel doesn't really have 3-D architecture. Instead, it takes separate 2-D worksheets, each saved separately in its own file, links them and stores them together in what they call a Workbook.

1-2-3's true 3-D architecture, on the other hand, actually lets you work multiple worksheets, tightly integrated, in one file. Because they are in one file, it's easy to create formulas, graphs and formatted reports that actually function across individual worksheets.

2-D can look like 3-D, but...

It doesn't take long to learn what you're living up.

Because Excel's 2-D worksheets are each in their own file, it's more difficult to work with them together.

So while 1-2-3's GROUP mode stays in effect

as you move from sheet to sheet, Excel's shuts off every time you move to another sheet.

While 1-2-3 users can assign range names and formulas across 3-D ranges, Excel users can't.

While 1-2-3 users can graph 3-D data in one step, Excel users can't.

While 1-2-3 users can create 3-way what-if tables, Excel users are limited to 2-way tables.

And while 1-2-3 is fully compatible with 1-2-3 for DOS 3-D files, Excel is not.

Compared to true 3-D, Excel's Workbook process is invariably more complex, less intuitive, more work intensive, and because everything is done through data links, slower.

In fact, it can take Excel 10 times longer than 1-2-3 to recalculate a multisheet file.

Learn now. Save time later.

It boils down to this. A 2-D spreadsheet is not a 3-D spreadsheet. 1-2-3 is true 3-D. And you already know how to use 1-2-3.

To realize the powerful benefits of a 3-D spreadsheet for Windows,™ visit your Lotus Authorized Reseller. Or call for your free demo disk and Lotus White Paper on the benefits of 1-2-3's 3-D architecture, at **1-800-TRADEUP, ext. 8492, today.***



Lotus

1-2-3 Release 1.1

Spreadsheet for Windows

Wang to head languages at Symantec despite indictment

BY SHAWN WILLET

Criminal indictments will have no bearing on plans to move Gene Wang over to the language development department at Symantec Corp., according to Symantec president Gordon Eubanks.

"Gene Wang is one of the best things that has happened to management at this company," Eubanks said.

"He's really cleaned house and done a great job with the project management division, and we expect to give him responsibility for languages presently," Eubanks added.

Wang and Eubanks were indicted for allegedly passing trade secrets while Wang was employed as head of languages at Borland International Inc. Eubanks vehemently proclaimed his innocence of any criminal wrongdoing and insisted that the case would have little bearing on the management of Symantec.

"I'm spending about 10 percent of my time dealing with this, mainly in talking to the press," Eubanks said. The CEO did say that Symantec was paying for the criminal defense of Wang, who allegedly committed the crimes while employed at Borland.

"I have the full support of our board [of directors]," he said.

Eubanks also said that the much-talked-about controversy was not distracting him from directing his company.

"If anything, morale has improved," Eubanks said. "We are keeping our employees informed of what is going on."

Meanwhile, Symantec's nemesis in the case, Borland president and CEO Philippe Kahn, said he felt the indictments were "sad" and he hoped the matter would be resolved "for the best."

"This is a matter between the [direct attorney] and Symantec," Kahn said. "We are not involved at all."

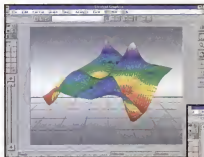
Borland has filed a civil suit in conjunction with the criminal case. However, it is expected to remain dormant until the criminal case is resolved.

A trial date has not been set for the case but is expected before the end of the year. Maximum penalties for the alleged trade secret theft range to six years imprisonment.

Stanford Graphics 21. Power Graphing!

In the "real world," communicating your analysis requires more than a pretty picture. Consider Stanford Graphics for Windows for your serious presentations. It delivers the best of both worlds: presentation and analysis. Now you can have everything you need to create high-impact presentations without sacrificing number-crunching muscle. And, you won't need a Master's degree to use it either! Stanford Graphics' Quick Start options will have you up and running in minutes. So you'll be able to concentrate on your message, and not the method. Even data analysis and tinkering are a breeze. Just click on a point to change its value; pull a lever to adjust a formula. So don't wait another nano-second.

Call right now for a free Demo Disk that will unleash the power of Stanford Graphics.



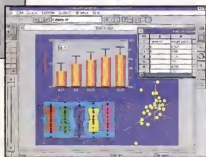
Top into powerful data processing graphs to transform raw data into stunning presentations.

"Stanford is a breakthrough product that combines technical charting, data analysis, and presentation tools. Basically, it's fabulous."

-PC Magazine
March, 1992

"When it comes to charting power, data analysis and short brain strength, nothing comes close to Stanford Graphics."

-Windows Magazine
November, 1992



Find the meaning behind your data with advanced statistical graphs and formulas, including Student's t-test & multiple regression analysis.



See your data to usage you've never dreamed possible with the clarity of over 160 features, statistical & technical graphs.

Form and Substance. Presentation simplicity and technical sophistication. Finally...presentation graphics with numerical clout!

3D VISIONS
2780 Skyway Drive • Torrance, CA 90505
Tel: 310-325-1330 • Fax: 310-325-1965

Call Toll Free Today.
1-800-729-4723

The development, maintenance, and implementation of this product have no connection with Stanford University • Registered with permission March 17, 1992 • © 1992 3D Vision Communications Co.

Lenel tool embeds multimedia into other applications

BY KELLEY DAMORE

Lenel Systems International Inc. unveiled this week a multimedia utility that allows users to embed multimedia into other applications.

Called MultiMedia Works, the program consists of a multimedia player, a multimedia server, and a presentation builder.

MultiMedia Works supports more than 40 file formats as well as Microsoft Corp.'s Video for Windows, Intel Corp.'s Digital Video Interactive, and Apple Computer Inc.'s QuickTime digital video formats, thereby eliminating the need for users to find the right player each time they want to use a piece of graphics, animation, video, or sound.

"We've eliminated the hassle of having to worry about things like file formats, storage locations, or whether a multimedia file is compatible with a particular player or viewer application being used," said Elena Prokupert, president of Lenel Systems.

MultiMedia Works also allows users to integrate full-motion video from a tape or laser disc.

The PC-based program supports Object Linking and Embedding and Dynamic Data Exchange function calls. It also includes customized macros for common Windows applications.

MultiMedia Works supports the Sony Video System Control Architecture protocol, which allows the program to control virtually any Sony consumer camcorder or VCR.

The program is available from Lenel for \$99.

A Supplementary Drivers Kit, which expands the program's external video device control capability, is available for \$99.

Lenel Systems, which is located in Pittsford, N.Y., can be reached at (716) 248-9720.

Free Demo!



"I've Had It.

We're Getting Hayes OPTIMAs. They're Affordable. They're Dependable. I Can't Go Wrong."



As modem prices continue to drop, it's important that reliability doesn't. With the OPTIMA™ family, you can count on the quality of Hayes at very affordable prices. Data modems. Data plus FAX modems. Board versions. Even portables. With speeds from 2400 to 14,400 bps, OPTIMA is Hayes quality at a surprisingly low price.

SPECIAL FEATURES. OPTIMA's Automatic Feature Negotiation selects the best combination of data speed, error-control, and data compression for throughputs of up to 57,600 bps to save big bucks on phone charges. Hayes® AutoSync eliminates the need for buying special adapter cards to communicate with PCs and mainframes. And to help avoid problems like data interruption and compatibility,



OPTIMA includes the Hayes patented Improved Escape Sequence with Guard Time and Hayes Standard AT Command Set. Just some of the features that helped Hayes win the Computerworld 1992 I/S Brand Preference Award in 8 categories.

EXTRA BENEFITS FOR YOU. All this low-priced reliability is packed with our famous Smartcom™ software to help you communicate easily in minutes. And it's all backed by a fast, efficient Hayes Technical Support team. Call 1-800-96-HAYES for your nearest dealer or product literature. In Canada, call

**NEW
LOWER
PRICES**

1-800-665-1259. Hayes quality, low prices, and peace-of-mind.

Think OPTIMA...from Hayes.



Hayes®

**Why settle for anything less?
Hayes products have the computer
world talking. More than ever.**



Go Online with Hayes BBS; call 800-874-2937 or 404-446-6336.
©1993 Hayes Microcomputer Products, Inc., P.O. Box 805805, Atlanta, GA 30348. Hayes, the Hayes logo, OPTIMA, Smartcom, and the Hayes® 505 Escape Sequence Patent icon are trademarks of Hayes Microcomputer Products, Inc.

Our fully upgradable notebook
is bound to be popular.
That's why we offer a lock.]

Which would you rather have?
An ordinary notebook that's out of date
almost as soon as you take it out of the box?
Or one that's so popular, your friends
will want to borrow it?



Price includes

- 25MHz i386SL
- 4MB RAM
- 64KB cache
- 80MB removable hard drive
- LCD VGA Super Twist
- Subtle monochrome display
- 3.5" 1.44MB floppy drive
- 5.9 lbs.

Introducing the DECpc 325SL.
The first notebook that lets you upgrade
the processor. Hard drive. Memory. Display.
Even service.

So it not only keeps up with your travels,
it keeps up with the latest software.

It's got
\$2,099
Street for 325
in month
two industry
standard
expansion slots. *Shipped in 48 hours or less*
You can run a data/FAX modem, SCSI or
Ethernet adapter or a wide range of other
options, simply by plugging in PCMCIA
cards (available from almost any
manufacturer).

An NiMH battery that lasts
up to six and a half hours, letting you
work your way across the
Atlantic uninterrupted.

Small size and light
weight. Just 1.8"
tall and 5.9 pounds.

Removable hard disk
and dual passwords (to protect data).
Even an optional cable lock.

To make sure your notebook
remains as secure as your
notebook investment.

It's the notebook you'll
use every day.

It's the notebook you'll
use two years from now.
Unless you forget
to lock it.

Snap-on modems!
Factory-installed
RAS-DOS™,
Windows 3.1™,
Bit-Cart™ and
Bit-Fax™ software
Serial, parallel,
keyboard/mouse and
floppy ports
Deluxe carrying case
One year Return-to-Factory
warranty



Upgrade and options

Processor upgrade to i486SL
RAM upgrade to 20MB
(i386SL) or
32MB (i486SL)
Hard drive upgrade
to 120 or 200MB
Display upgrade
to 256-color passive
or active matrix
Service upgrade
to DEC Partner

digital™

you know what you want.
be direct.



1800 438 4312

8:30am-5:00pm Mon-Fri ET
Please reference code 046



Trapped inside a black hole? Escape with XSoft.

These days, organizations everywhere are lost in a swirling vortex of documents and data. As a result, it's getting harder and harder to make good decisions.

Fortunately, there's a way out: the office automation, text retrieval, publishing, and workflow productivity software from XSoft. The benefits are dramatic. Sharper decision making. Focused workgroup collaboration. Productivity gains of up to 90 percent.

Suddenly, ideas and information will move through your company with a sense of direction. People can build on what passes before them, on screen or on paper, turning documents into strategic assets.

Begin group by group. Or start companywide. You're in control. XSoft's product families are fully scalable, so paths for future growth are always clear. And XSoft is fully compatible with UNIX and PC platforms.

In fact, XSoft software has everything you need to escape the darkness of information overload. Curious? Ask for our free white papers, "Getting the job done: A guide book to workflow management" and "What FrameMaker users should know about GlobalView." Just call 1-800-626-6775, ext. 124.



XSoft
A Division of Xerox



Window Manager / Brian Livingston

How to change your System and Notepad fonts in Windows

I've found a new, undocumented way to change the size and shape of Windows' menu and text fonts. This method is not mentioned in the Windows manual, Microsoft's Windows Resource Kit, nor in *Windows 3.1 Secrets*.

The bit-mapped font that is used in Windows application menus is called the System font. I can think of three reasons you might want to change this font: to make it larger so it is more readable; or to change it to a fixed-pitch font, rather than a proportional font.

The undocumented method to change

the System font is to add a line to the [windows] section of WIN.INI as follows:

```
[windows]
SystemFont=courie.fon
```

This statement replaces the normal System font with a fixed-pitch Courier font. I don't actually recommend this—

the System font works so well as a menu font precisely because it is proportional and bold, which Courier is not.

But you might have a good reason to change the size of the System font, rather than its pitch. In that case, you can try some other FON files that are in your Windows\System subdirectory.

If you installed Windows for a VGA system, the System font is probably called VGASYS.FON. You can make the System font smaller by changing your WIN.INI to specify EGASYS.FON, or larger by specifying B514SYS.FON.

Fonts that don't match your screen resolution probably were never installed to your hard disk. You can decompress them off the Windows diskettes by copying EXPAND.EXE from Diskette 1 to your Windows directory (if it isn't already there), then typing a command such as EXPAND A:\EGASYS.FO SYSTEMEGASYS.FON at the DOS prompt. (Notice the underscore character in the compressed file names.)

Windows 3.1 includes as many as 46 FON files on diskette, most of which you will never need. You may find some, however, that you prefer over the normal System font. Sets of fonts whose names end with E (as in COUR.E) are VGA resolution. F signifies larger 8514 fonts, while B indicates smaller EGA fonts.

Another method to change bit-mapped font sizes in Windows involves the [boot] section of SYSTEM.INI. If you installed Windows for a VGA system, this section probably looks as follows:

```
[boot]
fonta.fon=vgasys.fon
fontb.fon=vgafix.fon
oemfonta.fon=vgasys.fon
```

The "fonta.fon" line determines the system font. (The SystemFont line in WIN.INI overrides this.) FIXEDFON.FON determines the font used by Notepad and other fixed-pitch applications. OEM FONTS.FON determines the font used by some applications that support the IBM PC-8 (line draw) character set.

If you'd like smaller text in Notepad, so you can see and edit more lines within one screen, change VGAFIX.FON to EGAFIX.FON. To make the text larger and more readable, use B514F.FON.

You may need to use EXPAND.EXE, as described above, to decompress these files if they aren't already in Windows' System subdirectory.

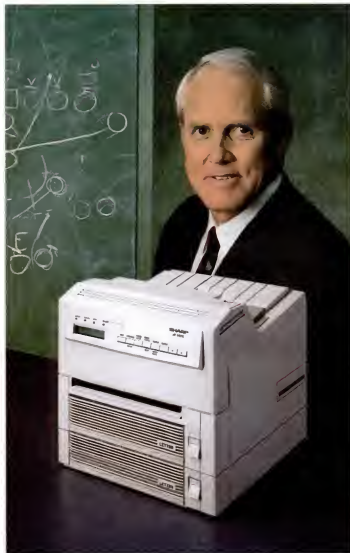
Caution: Make these edits to SYS TEM.INI using SYSEDIT.EXE, which always creates a backup file with a .SYD extension. If Windows doesn't find a valid FON file, it hangs, and you will need to copy SYSTEM.SYD over SYSTEM.INI to recover.

WATCH OUT, LARRY KING. I will be speaking about undocumented Windows features on the Computer Talk radio program, March 21 at 2 p.m. Eastern time. Call (800) 283-4147 to find the radio station in your area that broadcasts the program.

Brian Livingston is a speaker at Windows seminars. His new book is *Windows Gizmos* (IDG Books). Send tips to: Compuserve 70053.2035; MCI 420.0583; Internet 420-0583@mcimail.com; or fax: (206) 282-1248.

"GET THE PRINTER THAT'S IN A LEAGUE BY ITSELF."

Bill Walsh
CHAMPIONSHIP COACH



No other laser printer delivers more built-in value. The Sharp JX-9600 series.

You can't buy a laser printer on price alone. When you look at what you're really getting, you'll see that Sharp's JX-9600 series is the best value.

High Quality Text.

Sharp's unique High Resolution Technology takes ordinary 300dpi text and interpolates it to 600dpi. The JX-9600 series' 600dpi engine then uses four dots to define what other printers do with a single large dot. Combined with HP® PCL5, it delivers cleaner, smoother type, sharper lines and richer blacks than you can get with any ordinary 300dpi laser printer.

Fast Processing.

This sophisticated engine runs at a quick 8 pages per minute. But what really counts is the



type of processor. The JX-9600's advanced AMD® RISC processor renders even complex pages at an exhilarating rate.

Economical Supplies.

Factor in the cost of built-in supplies and the JX-9600 series comes out ahead every time. That's because Sharp gives you enough supplies to print about 15,000 pages (11,000 more than most others). That's an average of two years' operation and savings up to hundreds of dollars. Built-in.

And when you finally do need supplies, you'll enjoy a cost per page of just 2¢.

Ultra-Quiet.

Sharp's advanced design and unique "Sleep" mode make the JX-9600s some of the quietest printers around. Since a printer isn't actually printing most of the time, Sharp printers are smart enough to "go to sleep" when not in use, making your work environment virtually silent while reducing your electric bill.



Upgradable.

The JX-9600 can be upgraded to PostScript® or buy it that way as the JX-9600PS. Expanding memory is a snap, too. But you'll never have to add a second paper tray—the JX-9600s come with two. Perfect for collating or 500 sheet continuous printing.

For your nearest dealer and free literature,

Call 1-800-BE-SHARP

Because when you look at the real numbers, the JX-9600's built-in value can't be beat.

SHARP
FROM SHARP MINDS
COME SHARP PRODUCTS™

AMD is a registered trademark of Advanced Micro Devices, Inc.
PostScript is a registered trademark of Adobe Systems, Inc.
HP and PCL are registered trademarks of Hewlett-Packard Company.



BANKING SYSTEMS • CALCULATORS • CASH REGISTERS • COLOR SCANNERS • COMPUTERS • COPIERS • FACSIMILE • LASER PRINTERS • TYPEWRITERS • WIZARD • ORGANIZERS

© 1993 Sharp Electronics Corporation.

NEWS / HARDWARE

PIPELINE

PRICE CUTS

HP cuts list prices on most peripherals

Hewlett-Packard Co. reduced the suggested list price on most of its printers, plotters, scanners, and fax machines. But because the price cuts are the result of lower discounts being offered to dealers, the company expects street prices to remain the same. The LaserJet IIlp is the only product that might actually have a lower street price, the company said, as HP cut an additional \$300 off the dealer price. The cosmetic change will allow HP to advertise its products at a lower price.

NCR Corp. dropped the price of its 3170 notebooks by 11 to 19 percent. A version with an 80-megabyte hard drive and a 2,400/9,600-bps-per-second (bps) modem now lists for \$2,532. At the high end, a version with a 180-megabyte hard drive and a 14,400/9,600-bps modem carries a list price of \$3,345. All models use the Intel 386Sx processor and have 4 megabytes of RAM. (513) 445-5000.

ANNOUNCED

Dell expands line of multimedia PCs

Dell Computer Corp. introduced two new multimedia systems priced at less than \$2,000, including a color monitor. The 11,499 33-MHz 386-based ValueStation 386 and the 11,999 25-MHz 486-based ValueStation 486 come with a CD ROM drive, a SoundBlaster audio card, 4 megabytes of RAM, and a 3½-inch floppy drive. The 386 system offers 640-by-800 resolution and an 80-megabyte hard drive. The 486 computer provides 800-by-600 resolution and a 120-megabyte hard drive. Both systems come with DOS, Windows, and CD ROM titles. (800) 289-3355.

SHIPPING

Aquiline adds color to portable line

Aquiline Inc. is shipping a passive matrix color version of its 486DX computer. The 10-inch display is capable of supporting 256 colors. The Aquiline NT433C uses a 33-MHz Intel 486DX microprocessor and ships with 4 megabytes of RAM. A version with a 120-megabyte hard drive costs \$2,995, and one with twice that storage capacity has a list price of \$3,295. (518) 785-8517.

Continued on page 34



NuTek is looking to break Apple's Mac monopoly with its NuTek One, a system that features its own BIOS and operating system.

NuTek builds Macintosh look-alike; has own OS

Supports some parts of System 7 and several Mac applications

By TOM QUINLAN

A new level of Macintosh compatibility is being introduced today, as NuTek USA Corp. unveils its NuTek Mac-compatible system.

Unlike other companies that have tried to emulate Apple Computer Inc.'s Macintosh by using obsolete ROM chips from older Macs or a software-only solution for powerful workstations, the NuTek One system combines a proprietary operating system with a hardware design that mimics the Macintosh.

The NuTek One also supports some features of Apple's System 7 operating system but lacks support for Publish and Subscribe, Balloon Help, virtual memory, and QuickTime. Although some support will be added later, said Benjamin Chou, NuTek president.

The system comes with three NuBus slots, so users can add standard Mac peripherals, and a 33-MHz 68030 processor from Motorola.

With a NuTek chip set that

mimics some of the Mac's functionality, the system is designed to be as fast as Apple's mid-priced Mac IIvx.

The first incarnation won't be completely Mac compatible, although "we've tested the top 15 software applications and 13 of those worked," Chou said. The exceptions are Microsoft Corp.'s Excel and Works packages.

NuTek's system includes the motherboard, operating system, and casing for a list price of \$899.

Resellers must add memory, keyboard, hard and floppy drives, monitor, mouse, and power supply, giving the NuTek One a price of approximately \$1,600, the company said.

Another Mac-compatible system, which would also run under Windows 3.1, will include an additional 33-MHz 486DX processor, two 80-megabyte hard drives, and 12 megabytes of RAM for a suggested price of less than \$3,000.

NuTek, based in Cupertino, Calif., can be reached at (408) 973-8799.

S3 endorses peripheral standard, develops PCI chip

By GATE CORCORAN

The Peripheral Component Interconnection specification announced by Intel Corp. earlier this month gained support in the graphics market from S3 Inc., whose controller chips will work with the PCI local bus.

S3, in Santa Clara, Calif., will begin sampling a PCI version of its 86C928 graphics accelerator chip next month, with production set for summer. Boards are expected to ship to end-users at the same time, said an S3 representative.

The 928 chip increases performance by offloading graphics operations from the CPU. It is currently available for ISA, EISA, and VESA local bus.

The PCI version of the 928 chip will work under Microsoft Corp.'s Windows NT, which will include drivers for the chip, the company said. Those drivers are being written by Microsoft, a company executive said.

The chip has a 32-bit PCI bus interface, 24-bit color, and multimedia extensions, the company

FTC keeps tariff on active matrix

U.S. vendors react with surprise

By YVONNE LEE

Vendors were surprised last week when the Federal Trade Commission upheld a 1991 tariff on active matrix displays.

The ruling exempted electroluminescent displays, which had been subject to a lower 7 percent tariff.

Many vendors had anticipated that the 62.7 percent tariff would be lifted under the Clinton administration, allowing them to assemble notebooks and other computers containing the screens here in the United States. One company had expected the tariff to be overturned sometime this month.

"We could have begun moving manufacturing over here," said Dick Greene, product planner for the IBM Personal Computer Co.

IBM wanted to move the manufacturing of systems with active matrix displays overseas, avoiding the tariff — which does not apply to completed units — and they will continue to do so.

Smaller clone makers will not be able to move manufacturing overseas, said Tim Pattan, business planning manager at Hitachi, which predictably opposed the ruling.

The case will now go before the U.S. Court of International Trade, in New York.

The case will now go before the U.S. Court of International Trade, in New York.



Apple was disappointed by the FTC's display ruling, which affects PowerBooks.

"Their thinking was heavily driven by wishful

thinking," said president Volker Dolch. "We expected that things would ease and that we could bring back some of our operations to our headquarters here in California. We will have to continue doing what we have been doing."

Larger companies, including Apple, IBM, and Toshiba have moved manufacturing of notebooks with active matrix displays overseas, avoiding the tariff — which does not apply to completed units — and they will continue to do so.

Smaller clone makers will not be able to move manufacturing overseas, said Tim Pattan, business planning manager at Hitachi, which predictably opposed the ruling.

The case will now go before the U.S. Court of International Trade, in New York.

ny said.

The chip's multimedia features include a shared frame buffer, which lets the video co-processor write directly to display memory and cuts costs by eliminating the need for a second frame buffer, the company said.

It also can synchronize the chip's output with NTSC and PAL video signals, a feature known as genlocking.

The graphics accelerator can support as much as 4 megabytes of video RAM. It offers 24-bit

color at resolutions as high as 1,024 by 768 with a 72-hertz refresh rate, S3 said.

The chip will sell for \$65 in quantities of 1,000.

Although the list of vendors that have pledged to support PCI is long, only a few have actually announced products.

These include ATI Technologies Inc. of Scarborough, Ontario, Canada, with a PCI graphics chip that is due to sample soon, and NCR, which is planning to deliver a PCI SCSI I/O controller.

QMS announces high-output network printer

By KELLEY DAMORE

QMS Inc. will enter the midrange market this week by introducing its 45-page-per-minute laser printer.

The printer is targeted at users who are downsizing from mainframes to client/server-based applications and need high-volume printing, said Frank Wendt, senior product manager for the Mobile, Ala.-based company.

The QMS 4525 Print System is based on Océ Graphics USA Inc.'s copier/printer engine and offers a duty cycle of 300,000 pages per month. The printer incorporates QMS' Crown technology, which is capable of spooling, compiling, rasterizing, and interpreting multiple print jobs concurrently.

The printer can simultaneously attach to two independent networks through its optional network interfaces. These interfaces can accommodate Ethernet or Token Ring in NetWare, EtherTalk, TCP/IP, or DECnet configurations. The device comes standard with parallel, serial, and LocalTalk ports.

A configurable mail bin allows the printer to output collated documents in multiple bins. Each bin holds 100 sheets,

and a stapler-stacker option is available.

The machine also has an automatic page-error recovery feature, which allows the printer to resume printing from the beginning of the affected page after an error has been detected. The printer prints on letter-, legal-, and A4-size paper; labels; and transparencies. It also offers a 2,200-sheet input tray, and duplex-

ing is standard.

The machine has a 25-MHz MIPS R3000 RISC processor. It comes standard with 32 megabytes of RAM and a 200-megabyte hard drive for supporting job spooling, font caching, and page memory.

The printer also features emulation switching between Adobe's PostScript

Levels 1 and 2, Hewlett-Packard Co.'s PCL5, HP-GL2, line printer, and CCITT Group 4, and offers L303 Plus emulation as an option.

The device will be available this month through resellers for \$71,990 to \$79,990, depending on configuration.

For more information, QMS can be reached at (205) 633-4300.

'Roll-your-own' pen PCs offered by MicroSlate

By YVONNE LEE

An agreement signed this month between MicroSlate Inc. and Lexmark International Inc. will enable users to design their own pen-based systems.

The agreement will marry the ruggedness of MicroSlate's pen systems with Lexmark's expertise in designing lightweight plastic casings.

Users will work with MicroSlate to specify the components they want in their systems. The computers will be built around MicroSlate's 4-by-6-inch motherboard.

As an incentive for organizations to reuse their designs, MicroSlate will share royalties on future designs with the customer, said Jan Rowinski, MicroSlate's vice president of operations.

That ensures that if a utility company builds a computer used by other utilities, the design can be copied and the company recovers the expense of the original design, Rowinski said.

Features of MicroSlate's current Datelike pen systems, which may also be used in future systems, include Intel's x86 processor line, as much as 16 megabytes of RAM, and space for two data storage devices.

Storage options include slim-line floppy drives, hard drives as large as 180 megabytes, flash memory, and a floppy drive.

It will take a minimum of six months from the initial design of the computer until production, Rowinski said.

MicroSlate, based in Brossard, Quebec, Canada, can be reached at (514) 444-3683.

Hewlett-Packard's managed 10 Base-T hubs will meet all of your expectations.

Except one.

U.S. list price for HP EtherPrint Hub Plus 48 (HP managed) 22 port hub: \$1,299. *Based on U.S. list prices of 6.10/10 HP EtherPrint Hub Plus 48, 22 port hubs: 2003-04 and 2003, 30cm 30/100 T1, Cat5e/1000 S-100, 1000 report on worldwide shipments of managed and modular hub market. © Canada call 1-800-387-2867. Japan, 1-800-387-2867. © 1993 Hewlett-Packard Company.

Fujitsu to debut its first updated Poqet systems

By YVONNE LEE

Fujitsu Personal Systems today will introduce new versions of the Poqet PC and PoqetPad computers, the first since the company acquired Poqet Computer Corp. in May of last year.

The \$1,495 PoqetPad Plus and the \$1,095 Poqet PC Plus are scheduled to

ship in late May.

Both models are slightly larger, provide backlit screens, add memory, and include faster processors than in the original Poqet PC. However, they no longer run on AA batteries, and the Poqet PC Plus does not include the suite of applications that were pre-installed on the Poqet PC.

"We're really targeting dedicated soft-

ware [users]," said Glenn Gottlieb, manager of product marketing. Both computers are designed for companies that want to create their own data collection programs.

The 1½-pound Poqet PC Plus uses the 3.3-volt NEC V30 processor, which is equivalent to an Intel 8086. It has 2 megabytes of RAM and two Type II



Fujitsu's Poqet PC Plus offers users a "backlight on demand" LCD for a list price of \$1,095.

PCMCIA slots. The computer runs between 3 and 12 hours on nickel-cadmium batteries.

This computer will not fit in the Poqet-Com radio frequency station available for the Poqet PC, but similar functions will be available through PCMCIA Type II cards, Gottlieb said.

The PoqetPad Plus also uses the 16-MHz V30 processor and has 2 megabytes of RAM and a maximum battery life of 12 hours.

The PoqetPad Plus has one Type II and one Type III PCMCIA slot. It will use Grid Systems' PenRight operating system.

Fujitsu Personal Systems is in Santa Clara, Calif., and can be reached at (800) 831-3183.

Standards-based. Novell certified.

Twisted-pair, AUI and BNC connectors.

Integrated SNMP IP/IPvX management agents.

Designed to work with HP OpenView, the leading network management platform.

Shielded and unshielded twisted-pair compatibility.

Standard RS-232 console port.

Automatic port segmentation.

LEDs for port activity, status, fault and power.

Designed for mixing and matching with multivendor hubs and multiprotocol routers.

27-year MTBF.

One year on-site warranty.

Self-test for fault isolation.

Redundant links.

Standard 19-inch rack or wall mountable.

Installation in minutes.

\$80
per managed node!



Talk about value! HP's managed 48-port hub is loaded with features for just \$3,995. You'd pay 40% more for SymOptics' 32% more for 3Com's. And 128% more for Cabletron's! No wonder we're the market-share leader in this category, far ahead of the pack!

You get the same price/performance leadership from our entire line of networking products: from 16-bit adapter cards to multiprotocol routers and network management. And with our stackable approach, you can grow at your own speed.

For fast faxed details, call us at 1-800-964-1565. Expect nothing but the best.



**HEWLETT
PACKARD**



Sparcom offers docking stations to link up HP 95LX

By YVONNE LEE

Sparcom Corp., makers of HP 95LX peripherals, is shipping two docking stations for the palmtop computer.

The docking stations allow remote users to transfer files to their desktop and use desktop facilities such as fax machines, modems, and printers.

The \$169.95 PrintStation allows users to print directly from a palmtop without transferring files to another computer.

The palmtop uses a serial-to-parallel converter to compensate for its lack of a parallel port.

It also has software to transfer files between a desktop DOS-based or Macintosh computer.

The \$399.95 ComStation has all the features of the PrintStation including a built-in fax/modem and the capability to run without AC power. The modem sends and receives data at 2,400 bits per second and sends faxes at 4,800 bits per second. It uses either nickel-cadmium batteries or AC power.

Both models work with the 512K or 1-megabyte versions of Hewlett-Packard Co.'s HP 95LX. Company officials said they did not know whether PrintStation and ComStation will be run with the 100LX, HP's announced successor to the 95LX.

Sparcom, based in Corvallis, Ore., can be reached at (503) 757-8416.

You know
your users will like
Macintosh.



Here's why you will.

There's nothing new about users liking Macintosh. The news is that now Apple® Macintosh® has more of what IS professionals need for client/server computing.

Start with the fact that Macintosh connects to virtually any host, file server, or database through any network. So you can build for the future while you leverage the systems that are in place today: everything from an IBM® mainframe to LAN Servers running NetWare®.

With Macintosh you can capitalize on the power and flexibility of personal computers to develop applications quickly, whether you're programming in C, or customizing a shrink-wrapped application.

Apple is committed to delivery of cross-platform tools that provide a complete range of client/server solutions for Information Systems professionals. That's why today's Macintosh integrates seamlessly with major LAN systems and network architectures such as SNA and OSI. It also supports major protocols and standards such as TCP/IP and X.25. And with applications such as PATHWORKS™, you can deliver client/server transaction processing systems.

See for yourself. Send for any one of the videotapes below. They will provide you with information you're sure to like.



Choose any one of these three free videos. Just call 1-800-635-9550, ext. 265.



Client/Server Computing.
Learn how other companies are using client/server technology today and about Apple's VITAL Architecture.



Applications Development.
Discover how other companies are using Macintosh to develop a broad range of applications quickly, using a wide variety of development tools.



Connectivity. See how the modular architecture and built-in networking of Macintosh combine with Apple's support for major protocols and standards to deliver a wide range of network services.

PIPELINE from page 29

PRICE CUTS

Canon bubble-jet printer prices burst

Canon Computer Systems Inc. has cut the price of its existing bubble-jet and dot-matrix line by as much as 30 percent. Its BJ-10ex portable is now priced at \$349, while the BJ-200 Desktop was reduced by \$100 to \$449. The BJ-300 Business is now priced at \$499. Its wide-carriage BJ-330 dropped to \$699. The BJC-800 Color (PC) and the BJC-820 Color Macintosh dropped 28 percent to \$1,999 and \$2,199, respectively. (800) 848-4123.

ANNOUNCED

IBM gains outlets for OEM processors

IBM has signed on three distributors and five manufacturers' representatives to sell integrated circuit components to PC makers. The sub-systems will include boards based on IBM's line of SLC chips — unique versions of the Intel x86 architecture — as well as the PowerPC.

Radius inc. this month will begin shipping a 20-inch color monitor that supports refresh rates as high as 160 hertz. The monitor also incorporates other high-end features, such as dark display glass for better image quality. The Radius IntelliColor Display/20 will list for \$3,199. (800) 227-2795.

UPGRADES

RasterOps' trade-in targets SuperMac

Users of SuperMac Technology's DigitalFilm can hand over their boards to RasterOps Corp. in exchange for the Editing Edge Suite and \$600 in coupons. RasterOps' single-slot suite for the Macintosh includes a MoviePak video compression and decompression daughtercard, a MediaTime graphics board, and a signal encoder. (800) 729-2656.

VGA and graphics accelerator boards based on chips from Trident Microsystems Inc. will soon work with Microsoft Corp.'s NT. Trident announced. The company is now shipping Windows NT drivers to board makers. The drivers support resolutions ranging from 640 by 480 to 1,024 by 768 with 16 and 256 colors. (415) 691-9211.

Matrix Electronic Systems Ltd.'s High Plus for CAD graphics accelerator now has drivers for running two accelerators at once. If users install two accelerator cards in one PC, they can run two accelerated screens simultaneously at resolutions of 1,280 by 1,024. (800) 361-4903



For users who still need the unique capabilities of an impact printer, Datasouth offers the \$1,795 A3300.

Datasouth offers small, fast dot-matrix printer

BY KELLEY DAMORE

Datasouth Computer Corp. unveiled this week a narrow carriage version of its high-speed, nine-part forms dot-matrix printers.

The Documax, which will ship in April, offers 333-character-per-second speeds and has draft and near-letter-quality mode. The machine comes in three versions: a dual-tractor, single-tractor, and cut-sheet model.

The printer is targeted at industries such as those printing hotel bills, patient admissions and discharge forms, airline tickets, and packing slips that need to put multiple forms in a limited space, said Jim Busby, Datasouth president.

The printer offers support for ASCII, Epson FX, T1 885, IBM Proprinter, DEC LA 120, and

DS 180 formats.

"For the market that Datasouth is targeting, it is a very innovative product — especially [because] it offers such a small footprint and robust paper handling options," said Marco Boer, an analyst with IDC, in Framingham, Mass.

"A car rental agency, for instance, can now fit a high-speed machine on a desk without it taking up too much space," Boer said.

Its options include \$1,000 twin-axial and \$1,200 coaxial interfaces. A bar code is also available for \$200.

The single-tractor version, the A3300, is priced at \$1,795. A dual-tractor option, the A3302, costs \$1,995. A cut-sheet option will ship in June for \$1,995.

Datasouth, in Charlotte, N.C., is at (800) 476-2120.

NEC notebook line has modular parts

Processors, RAM cards, screens can be removed and upgraded

BY YVONNE LEE

NEC Technologies Inc. is shipping its UltraLite Versa series of modular notebooks, which features removable components that users can upgrade as they wish.

The Versa notebooks sport upgradable microprocessors, user-installable RAM cards, and upgradable screens and will offer a pen option in the second quarter.

The notebooks use local bus video, allowing them to run full-motion video. Pen users can fold them for use as a tablet, and they can be used for presentations such as slide shows.

The floppy drive snaps out, allowing users to slide a supplemental battery in its place. Each battery runs for approximately 4½ hours when used in the monochrome system, said Renee Bader, NEC manager of strategic marketing for portable systems.

Users can upgrade the memory with 4- and 8-megabyte, plug-in memory cards. A 16-mega-

byte card is scheduled to ship in the second quarter.

The UltraLite Versa 20, which uses a 20-MHz Intel 486SL microprocessor, is available with 80- or 120-megabyte hard drives; the UltraLite Versa 25 is available with 120- or 180-megabyte drives.

The computers have an optional docking station with two full-length ISA slots.



NEC's Versa features an upgradable design, 486SL processor, and a list price of \$2,659.

Pricing starts at \$2,659 for a monochrome UltraLite Versa 20 with a 20-megabyte processor and an 80-megabyte hard drive. A color-display version with a 180-megabyte hard drive costs \$4,539.

NEC Technologies, in Broomfield, Mass., can be reached at (508) 264-8000.

Unisys adds ISA-based machines to SuperGen line

BY JAYNE WILSON

Unisys Corp. is adding desktop and portable ISA-based models to its line of CTOS SuperGen (SG) commercial workstations.

The SG3000, shipping this month, is a desktop CTOS client workstation. It is based on Intel Corp.'s 25-MHz 486SX and comes with an ISA bus, 4 megabytes of memory, and an IDE hard drive. Also included

is a CTOS Client Card, which provides connectivity to the CTOS LAN and lets the workstation access any 386 or 486 CTOS server on the network.

Available in April, the SG1000 is the first CTOS notebook client. It is based on Intel's 25-MHz 386SL and includes a removable disk, two PCMCIA 2.0 slots, and a keyboard trackball. It comes standard with 4 megabytes of RAM and single

serial, parallel, and VGA ports.

"[The SG3000 and SG1000] run the CTOS operating environment, which includes a full range of integrated hardware and software to allow customers to develop mission-critical, LAN-based applications," said Bruce Halvorsen, Unisys manager of program marketing.

The SG3000 also offers optional support for a CTOS Video Card to provide Super

VGA graphics resolution.

Also available is an optional "remotability" device designed to save space by enabling users to locate the processor up to 15 feet from the screen, keyboard, mouse, and I-bus peripherals.

The SG3000, priced from \$1,995, is available this month. The SG1000, priced at about \$3,000, will be out in April.

Unisys, in San Jose, Calif., can be reached at (215) 986-2214.

Storage Solutions rolls out first 2-gigabyte disk drive

BY ED SCANNELL

Storage Solutions Inc. has delivered what it believes is the first 2-gigabyte, 3½-inch disk drive for external storage subsystems and disk arrays.

Available now, the SSI-2000 is the first commercial product with a 68-pin SCSI connector

that can transfer 16-bit data.

The drive's 68-pin connection and host adapter increase the synchronous data transfer rates from 10 to 20 megabytes per second (Mbps), a company representative said.

The drive offers read-ahead caching capabilities with a 512K multisegmented data buffer, au-

tomatic sector reallocation, and automatic power management.

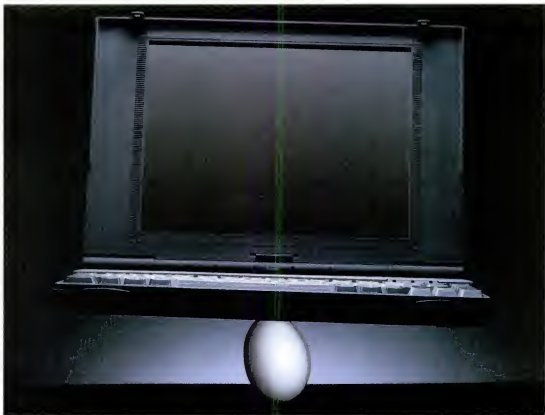
The unit has an average access time of 9.2 milliseconds. With its 2-megabyte capacity, it has the highest data density per track and requires fewer seeks to access data. This results in better access to data with transfer rates from the media of

more than 5 Mbps.

Company officials said the SSI-2000, with a mean-time-between-failure (MTBF) rate of 750,000 hours, is the most reliable drive available.

The SSI-2000 costs \$5,995. Storage Solutions, in Stamford, Conn., can be reached at (203) 323-0035.

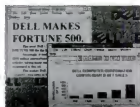
THERE'S NOTHING LIGHTWEIGHT ABOUT THIS 3½ POUND NOTEBOOK.



At just over 3.5 lbs, the Dell® 320SLi offers features and functions usually reserved for systems twice its weight. So call and order one today. At this price, it shouldn't be a heavy decision.



You're not the only one working late. Dell's toll-free support lines are now open 24 hours a day, 7 days a week. There's also nationwide on-site service and a 24-hour TechFax™ line.△



Comes with all you need to run the most hardware software, including MS-DOS® 5.0 and Microsoft® Windows™ 3.1.



That's not all you'll find in here. There's room for a modern coprocessor, 120 MB hard drive and up to 10 MB of RAM.



Your hands don't get smaller just because your computer does. So Dell gave the 320SLi a full 85-key keyboard with special screen navigation keys and a built-in keyboard mouse.



We call it a notebook, but it's actually smaller. Just 7¼" x 11" and only 1¼" thick. So you might actually be able to fit some briefs in your briefcase. Maybe even a sandwich or two.

\$1,399
LEASE ◊ : \$52/MONTH

This small number gets you all these big numbers: 20 MHz i386™ SL processor, 2 MB of RAM, 60 MB hard drive, VGA Reflective (9.5" 640 x 480) LCD, external 3.5" floppy drive and up to 4 hours of work from the NiMH battery.

DELL

800-433-3509

WHEN CALLING, PLEASE REFERENCE #1191046
HOURS: 7AM-9PM CT MON-FRI, 8AM-4PM CT SAT, 10AM-3PM CT SUN
IN CANADA, CALL 800-668-3021. IN MEXICO CITY, 228-7811.

△ Service provided by BestTec Service Corporation. On-site service may not be available in certain remote locations. © Licensing arranged by Licensing Group, Inc. IBM is a trademark and the Intel Inside Logo is a registered trademark of Intel Corporation. MS-DOS and Microsoft are registered trademarks and Windows is a trademark of Microsoft Corporation. FORTUNE 500 is a registered trademark of The Time Inc. Magazine Company. Dell disclaims proprietary interest in the marks and names of others. © 1993 Dell Computer Corporation. All rights reserved.

Low Radiation



ViewSonic

The New Generation 17" Monitor

Advancing into the future is the powerful, new generation ViewSonic 17... with crispness and clarity unheard of before now. So, if a high-contrast, extremely bright, sharply focused screen is important to you, this is the answer! Plus, this remarkable monitor runs at 76Hz refresh at an astonishingly high 1,280 x 1,024 and beyond, which will give you a flicker-free image.

Our unique ViewMatch™ color control is an easy-to-use system that takes the guess work out of printing by adjusting colors to closely match printer output. Brighten the red. Lighten the blue. No problem; it works. And the ViewSonic 17 even has an ergonomically designed drop-down control panel that's as simple to use as

a typewriter. More great features include digital controls and advanced anti-reflection coating...all adding up to make this everything a 17" monitor should be. With its big screen display and edge-to-edge image, this is the monitor of choice for Windows, desktop publishing and CAD/CAM applications.

For safety and vision protection, the monitor meets strict MPR-II and ISO 9241-3 standards.

Call **800-888-8583** for more information on our products, including our new line of 15" through 21" monitors.

Welcome to the New Generation.



All products and brand names are registered trademarks of their respective companies.

ViewSonic®

20480 Business Pkwy Walnut, CA 91789
Tel. (909) 869-7976 Fax (909) 869-7958



Tech Talk / Steve Gibson

Torque performance measuring tool avoids 'blit cheaters'

I've been going to totally crazy lately trying to discuss Windows display card performance without referring to the Winbench or its Winmarks. So two days ago I decided to do something about it. The result is a new little program

called "Torque."

Torque is not, I repeat, *not* intended to help select a Windows display adapter. It measures and displays the maximum rate of data flow from a computer to any Windows display and the maximum rate of flow within that adapter. As we'll see, this is *not* the same as measuring the best overall Windows performance. Good

throughput is necessary but not a guarantee of performance.

Any performance measuring tool must be capable of sensing the passage of time. To achieve this, Torque reaches down into Windows' privileged and protected "ring zero" to tap into the PC's high-resolution timing hardware. This allows it to measure elapsed times with better than

one-microsecond resolution. I'm very pleased with the way this turned out because Torque's resulting numbers are extremely stable and highly repeatable to approximately four significant figures, or 0.01 percent. Torque also goes out of its way to circumvent and avoid bench mark "blit cheaters."

Torque delivers two numbers. The first is the maximum rate of pixel flow from the computer to the display screen. This is, of course, critical for snappy displays but somewhat less so than you might first imagine. Torque's second indicator is the rate of pixel movement within the display's own memory. Performance here is obviously useful for scrolling screens. But this also plays a significant role in off-screen image component caching. Yes, caching "things" off-screen can provide real value in addition to benchmark score cheating.

So what did Torque show me? A no-name adapter based upon the venerable Tseng Labs ET4000 chip showed memory-to-screen throughput of 2,455,795 pixels per second; however, the screen-to-screen throughput was 1,204,797 — only about half of the memory-to-screen throughput. Because there's no acceleration in the ET4000 chip, screen memory must first flow back to the processor, then back out to the display memory. Naturally this round trip takes twice as long.

The profile of accelerated adapters is quite different. I "torqued" a Diamond Stealth 24, Hercules Graphite, Paradise Accelerator for Windows, Orchid Fahrenheit 1280VA, Diamond Stealth VRAM, and Diamond Speedstar 24x (all ISA-bus models). The raw memory-to-screen throughput of all the cards was nearly identical — ranging from a high of 3,210,000 pixels per second (the Stealth 24 and Paradise cards) to a low of 2,906,226 (the Graphite).

However, in the screen-to-screen pixel movement, these babies really shone. The top card was Orchid's Fahrenheit, which actually moved 27,794,385 pixels per second! Close in second place was Diamond's Stealth 24 at 23,682,404. Both cards use S3's 86C801 chip to achieve this performance. Remember, the old ET4000 moved 1,204,797 pixels per second. The S3 boards are about 23 times faster! The Paradise lost the screen-to-screen race with only 10,950,000, the Stealth VRAM turned in 14,697,000, and the Graphite came in at 15,443,000.

We'll discuss the significance of Torque's "raw" pixel throughput measurements soon. In the meantime if you'd like to "Torque" your own displays, you can find it on my BBS at (714) 362-8848. I'll also post it in several CompuServe forums.

IT FOLLOW-UP. My assertions last week regarding the IIT AGX014 Windows accelerator caused quite a stir. I'll be meeting with IIT and Hercules to discuss and explore the issues I raised, and I'll share any new information with you in upcoming columns.

Steve Gibson is the developer and publisher of SpinRite and president of Gibson Research Corp., based in Irvine, Calif. Send comments to InfoWorld at MCI Mail 259-4127 or fax them to (415) 358-1269.



Buy Ami Pro 3.0, the Easy word processor from Lotus, and we'll give you the Norton Desktop for Windows absolutely Free!

When you buy the standard edition of Lotus Ami Pro 3.0, for the low Spectrum price of \$239, you'll receive the Norton Desktop for Windows from Symantec absolutely Free! It's that easy.

Ami Pro 3.0 is the Windows word processor that will make your work dramatically easier—and better-looking than ever. So you can create letter-perfect, picture-perfect documents in half the time, with half the effort. It's that easy.

And with the Norton Desktop for Windows, it's easier than ever to use your PC. The Norton File Manager lets you organize huge amounts of

files. Plus much more. Like automatic backup with The Norton Scheduler. And hard disk searches with SuperFind.

It's easier than ever to order your software, too. From Software Spectrum. We offer the convenience of toll-free telephone shopping. Friendly, knowledgeable sales people. Technical support and development services. Plus same-day shipping of orders received before 4:00 pm (Central). So call Software Spectrum and take advantage of this free and easy offer today.

Spectrum Price

Ami Pro 3.0	\$239
Ami Pro 3.0 License	\$199
Ami Pro 3.0 Node	\$199
Ami Pro 3.0 Upgrade (from previous versions)	\$105

**SOFTWARE
SPECTRUM**

1-800-824-3323

7:00 am to 7:00 pm (Central).

*Offer good while supplies last. **Prices subject to change. All product names referenced here-in are trademarks of their respective companies. (C) 1993 Software Spectrum.

Promises. Promises.



Delivery. Delivery.



While other printers promise networking efficiencies, only QMS really delivers. Through the power and flexibility of Crown™ technology, the QMS 1725 Print System supports an entire mixed network of up to 30 users by receiving, interpreting, spooling, storing, compiling, rasterizing, and printing different documents—all at the same time.

CROWN™ multitasking means your QMS 1725 won't become a network bottleneck. It provides configurable buffers, context switching, error recovery, spooling spillover, and precompiles information into compressed data blocks. It also includes a 25MHz RISC processor, plus SIO on all four interfaces and ESP all of which help it run at the rated print speed even in multipplatform, multiuser environments.

The QMS 1725 Print System provides direct connection to every major system, network, and protocol. It handles mixed environments of everything from Windows™ to UNIX® to Macintosh®, languages from HP PCL® to CCITT, to PostScript™ Level I and II compatibility; and a broad selection of interface and protocol options for Ethernet® and Token-Ring networks.

We more than stack up when it comes to paper handling! Our QMS 1725 includes electronic collation and 1,000 sheet input system, handles four sizes of paper, envelopes, and label stock plus transparency film, and offers duplexing, offset stacking, and a power envelope feeder.

The QMS 1725 delivers real network printing with real value. At up to 600x600 DPI resolution with a microfine toner cartridge, the QMS 1725 provides extremely high output quality. It features a monthly duty cycle of 50,000 pages, up to a 32MB RAM, 39 resident typefaces, and powerful, non-stop network printing capabilities that keep your images looking good and you ahead of the competition.

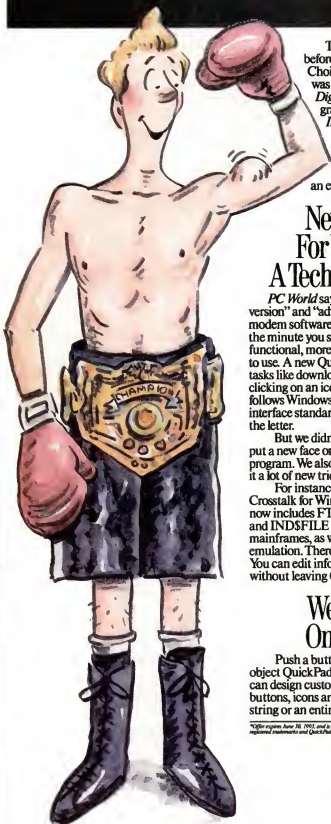
To get a free Network Printing Comparison, or for the name of your nearest QMS dealer, call **800 972-6704** or **205 633-4300**.



QMS® 1725 The Real Network Printer.

QMS, the QMS logo, and Crown are trademarks or registered trademarks of QMS, Inc. PostScript is a trademark of Adobe Systems Incorporated which may be registered in certain jurisdictions. All other product and company names are trademarks or registered trademarks of their respective companies. * Developer tested only. Novell makes no warranties with respect to this product.

The Heavyweight Champion Of Windows Comm Software Just Became Even More Of A Knockout.



The first round was no contest. Long before we won the *PC Magazine* Editors' Choice Award, Crosstalk® for Windows was the undisputed title holder. *Software Digest* called it the "best of the graphical communications packages." *InfoWorld* named it "Product of the Year." And it won the *Windows Magazine* Readers' Choice Award.

But for all its power, we knew it had the potential to pack an even bigger wallop.

New Crosstalk For Windows 2.0. A Technical Knockout.

PC World says it "jumps far ahead of the last version" and "advances the state of the art in modem software." And you can see the difference the minute you start it up. The interface is more functional, more convenient and just downright fun to use. A new QuickBar™ tool menu turns common tasks like downloading a file into a simple matter of clicking on an icon. And it follows Windows™ 3.1 interface standards to the letter.

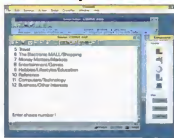
But we didn't just put a new face on an old program. We also taught it a lot of new tricks.

For instance, Crosstalk for Windows now includes FTTERM and INDSFILE support for connection to IBM® mainframes, as well as HP® and WYSE® terminal emulation. There's also a text editor built right in. You can edit information and send it out again, without leaving Crosstalk.

We Hit It Right On The Button.

Push a button and run a script, with our new object QuickPad™ feature. Even non-programmers can design custom controls with objects such as buttons, icons and pictures. Then embed a text string or an entire script in each object.

In minutes, you can design a whole new front end for a host system and make it as friendly—and as personalized—as you want. We even include pre-built QuickPads for accessing and navigating the major on-line services.



Windows within Windows: QuickPads float on your screen, ready to run entire scripts at the push of a button.

Now's The Time For You To Get Pumped Up.

Crosstalk for Windows sets the performance bar even higher for competitors in the Windows communications market.

—PC World, October 1992

You can have multiple comm sessions running at once—working on a VAX® link while you're connected to CompuServe®, for instance. You can remap your keyboard by moving keys on a graphical keyboard layout. Just drag and drop.

You can even import dialing directories from the DOS version of Procomm Plus™. (We want to make everything easy for you, including switching to Crosstalk.)

So climb into the ring. Registered users of Crosstalk for Windows and Procomm Plus can upgrade for only \$49, by calling our toll-free number.* Go a round or two with Crosstalk for Windows 2.0, and you'll know why it's the winner and still champion. To upgrade or for more information, call

1-800-348-3221, ext. 25L.**

CROSTALK

Another Communications Solution From DCA*

*Offer requires June 30, 1993, and is available in U.S. and Canada only. Must show proof of ownership. **\$49 outside the U.S. call (800) 475-2380. © 1992 Digital Communications Associates, Inc. All rights reserved. DCA and Crosstalk are registered trademarks and QuickPad and QuickBar are trademarks of Digital Communications Associates, Inc. Windows is a trademark of Microsoft Corporation. All trademarks are the property of their respective owners.



PIPELINE

ANNOUNCEMENTS

SmartMon pinpoints FDDI net problems

Wandle & Gottermann Inc. announced its \$500 FDDI SmartMon application for pinpointing FDDI problems with the company's DA-30 Interwork Analyzer. Shipping in May, SmartMon uses FDDI's Station Management frames, pooling the stations on the ring, consolidating information, and reporting over 40 network events. (800) 277-7404.

StonyBrook Services Inc. demonstrated snap-in modules for managing Cisco Systems Inc.'s routers via Novell Inc.'s NetWare Management System. The modules provide configuration management, automated performance monitoring, and mapping of the Router Manager for \$1,995. (516) 567-8060.

INTEROP

TCE integrates net manager, database

TCE Technology Group announced at Interop it will integrate its BanScan II network monitoring software with DeskTalk Systems Inc.'s Trendsystem, which combines management information from multiple devices into a SQL database. The unnamed product will be available in the second quarter and will provide management capabilities for Banyan, Novell, and SCO Unix networks. (408) 294-9314.

Worldtalk Corp. unveiled at Interop and simultaneously shipped a gateway for communications between Worldtalk 400 and Microsoft Mail. The gateway for MS Mail supports multimedia attachments and return receipts and costs \$2,500. The product works with Worldtalk servers. (408) 399-4000.

SHIPPING

Procomp is shipping plug-and-play card

Procomp USA Inc. is shipping its Pro-Vail SCSI card, which includes drivers for NetWare, DOS, OS/2, SCO Unix, and Windows. Priced at \$199, the plug-and-play controller includes a built-in floppy controller. (216) 234-6387.

Alisa Systems Inc. is shipping a version of its AlisaMail flagship product this month that provides connectivity to X-400 and SMTP. It requires a DEC VAX 3000 or higher running VMS. Version 5.4. Pricing starts at \$10,000. (818) 792-9474.

Interphase debuts FDDI over copper

Adapter cards will enable high throughput over low-cost wire

BY JAYNE WILSON

WASHINGTON — At Interop here last week, Interphase Corp. debuted adapter cards that will give users the high throughput of FDDI at the low cost of data-grade copper.

The Interphase EISA and SBus cards, available this spring, incorporate a new copper transceiver module developed by Philadelphia-based Technitrol.

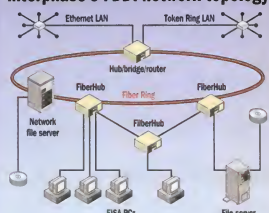
The cards are targeted to end-users who require high-end network solutions, and they promise access to more connectivity options and products, the company said.

The module is the first non-proprietary FDDI solution for unshielded twisted-pair copper networks to meet ANSI standards, enabling FDDI-over-copper interoperability.

"To our knowledge, we will be the first in the market to bring the [module] technology out in products," said Gary Dorsey, Interphase's network product marketing manager. "Our [EISA] adapter card will be available for beta customers in April and will ship in production quantities this quarter."

The cards will be available as off-the-shelf components to networking vendors starting

Interphase's FDDI network topology



Interphase's adapter cards installed in the FiberHubs will allow desktop PCs on Ethernet and Token Ring LANs to connect to FDDI using inexpensive copper wiring.

May 10 and are likely to be used in adapter cards, hubs, and concentrators.

The new Technitrol module was also demonstrated at the show on Interphase's Fiber-

Hub 1600 Concentrator.

Adapter prices start at approximately \$995.

Interphase, located in Dallas, can be reached at (214) 919-9000.

Xyplex bridges FDDI-to-Ethernet gap on desktop

Also debuts low-cost hub for connecting workgroups to a larger LAN

BY VANCE MCCARTHY

WASHINGTON — Xyplex Inc. laid plans here at Interop last week for linking conventional Ethernet networks to FDDI and debuted a low-cost wiring hub for linking small workgroups to the corporate network.

Because the number of desktop PCs using FDDI is small, Xyplex will focus on bringing desktops to the FDDI backbone, said Linda Faust, Xyplex vice president of product marketing.

The firm's first product is a stand-alone FDDI-to-Ethernet bridge. The 3310 bridge is available now for \$9,995 and comes with one FDDI interface — single- or dual-attached

— and one Ethernet interface. It also provides protocol-transparent bridging and supports full-rate filtering.

Later this year Xyplex will ship an FDDI-to-Ethernet module for its Network 9000 Intranetworking hub to provide concurrent bridging and routing from an FDDI back-

bone to three Ethernet segments, Faust said.

The bridge/router module, expected to ship by October, will be priced at less than \$15,000, Faust said.

For more conventional workgroup links, Xyplex launched its 3310 Concentrator. It is a 10Base-T hub with 12 RJ-45

ports for connecting PCs, workstations, and other intelligent devices via twisted-pair wiring.

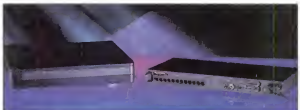
In its base configuration, the 3310 Concentrator costs \$66 per port, including the capability to upgrade for full Simple Network Management Protocol (SNMP) management.

The unit also comes with two 15-pin AU1 connectors and a BNC (thin-wire) connector for linking the 3310 to an Ethernet backbone.

The 3310 Concentrator is available now with pricing starting at \$795.

A full SNMP version is shipping for \$1,595.

Xyplex, in Boxborough, Mass., can be reached at (508) 264-9900.



Xyplex's Concentrator provides a cost-effective solution for connecting small PC workgroups to a corporate network.

Cayman adds dial-back capabilities to its GatorLink System

BY TORSTEN BUSSE

WASHINGTON — Sporting improved administrative capabilities, Cayman Systems Inc. demonstrated here last week the first upgrade to its multipoint AppleTalk remote access server.

The GatorLink System, Release 1.1 now offers support for dial-back capabilities, allowing remote users to dial

in to GatorLink, hang up, and receive a return call at a pre-configured phone number. This adds another level of security and allows users to transfer telephone charges to the main network site.

A menu option provides direct connection to the built-in Security Dynamics Secure-ID ACE/Server, which authenticates the ARAP dial-in account. The add-on also enables

LAN administrators to prevent users from tying up the dial-up connections by setting limits on a per-user or per-server basis.

Additionally, remote users can now be shielded from network broadcasts.

GatorLink System, Release 1.1 will ship this month and is priced at \$1,445. Upgrades are \$99.

The company also has im-

proved the performance of its \$995 GatorShare EX AppleShare-to-NFS gateway software, found in its GatorBox EX Ethernet-to-Ethernet routers.

In addition, the GatorShare software for the GatorBox CS and GatorStar GX are now \$995, down from \$1,995.

Cayman is headquartered in Cambridge, Mass., and can be reached at (617) 494-1999.

COMPAQ CONTURA. THE AFFORDABLE LEAVE YOU WISHING YOU

Buying some low-priced 486 notebooks is like buying a bottom of the line car. You drive off without power steering or air conditioning or even floor mats. If you get away with an AM radio, you've pulled off a coup.

At Compaq, however, we believe an affordable notebook shouldn't merely be the stripped-down, bare-bones version of a more expensive one.

Take the new 486SL Contura notebooks.

Although affordably priced, they're COMPAQ computers in the truest sense. They endure the same torturous testing as every other computer that we build.

Inside there's an Intel 486SL chip. Unlike the

4/25CX: Active color VGA ♦
Integrated EasyPoint trackball
♦ NiMH battery ♦ 4/25c:
Advanced passive color VGA ♦
COMPAQ Trackball ♦ NiMH
battery ♦ 4/25: Monochrome
VGA ♦ COMPAQ Trackball ♦
Enhanced NiCd battery
All models: Intel 25MHz
486SL with 8K cache and
numeric coprocessor ♦ 4MB
RAM (up to 20MB) ♦ 120MB
or 209MB hard drive ♦ Pre-
installed Microsoft Windows
3.1 and MS-DOS 5.0 as pub-
lished by Compaq **\$1,999***
4/25 starts under

486SX chip in comparably priced notebooks, this one has an integrated coprocessor. And it runs more efficiently, helping to extend battery life.

You have your choice of three Contura screens, all of which offer razor-sharp definition. There's

an active matrix screen that displays information in 256 colors. There's an advanced passive matrix color screen that offers 50% better contrast, and 33% improved response time over earlier passive technology. And there's a crisp and clear monochrome version as well.

The COMPAQ Contura 4/25CX comes with an

EasyPoint trackball that eliminates the need for a mouse. And all of the Contura models offer a unique feature called



DABLE NOTEBOOK THAT WON'T COULD AFFORD MORE.

Hibernation. This allows
you to shut your PC off
quickly without losing

brings you right back to
where you were.

Contura notebook PCs

batteries in as little as
an hour. And a variety of
modem options, includ-
ing cellular, allow you
to send and receive data
and faxes anywhere.

All of which explains
why the editors at PC
*LapTop Computers Mag-
azine* recently named our
Contura the best value
in notebook computers.

If you'd like to know

more, give us a call
at 1-800-345-1518,
and ask us

about

Contura.

The notebook PC
designed to accommodate
your budget limitations,
not constantly remind
you of them.



Thanks to our advanced graphics ac-
celerator, Contura blows the doors off
most other Windows notebooks. In fact,
it runs Windows 30% faster than
most 486 machines.*



Nothing is backed like a Compaq be-
cause nothing is built like a Compaq.
Contura includes a free three-year,
worldwide warranty with a year of
on-site** service in the US or Canada.



any data, and marks the
spot where you left off.
When you start your PC
up again, it automatically

also come with
an external battery charg-
er that lets you recharge

*In tests run by Compaq using PC Magazine's Late WinBench Release 3.1.1. **This service is provided by Contracted Service Providers and may not be available in certain geographic locations. Certain restrictions and exclusions apply. Microsoft, battery packs and certain options are covered by a one-year warranty. For further details on our limited warranty, contact the Compaq Customer Support Center.

SynOptics to bring ATM to corporate backbones

BY MARTIN LAMONICA

SynOptics Communications Inc. plans to offer products aimed at integrating asynchronous transfer mode (ATM) technology into corporate backbone networks.

LattisCell, set for shipment this fall, will include ATM 12- and 16-port switches and two network management applications. An SBus Synchronous Optical Network (SONet) ATM adapter card will be

smaller fiber-based workgroup network, the switch will cost \$23,950 for standard twisted-pair or fiber connections and \$31,950 for all-fiber cabling.

The LattisCell Network Management Application, priced at \$3,495, is based on SNMP and the SunNet Manager platform. It allows integration of existing Ethernet, Token Ring, and FDDI LANs

around SynOptics' ATM switch.

SynOptics' Connection Management System (CMS) connects directly to Sun Microsystems Inc.'s Sparc workstations and clones to administer switched and permanent virtual channels. It is priced at \$4,495. An ATM SBus adapter card, still under development, will fit into a Sparc 1, 2, or 10 workstation.

It supports the local network SONet at 155 megabits per second for the physical layer, as defined by the ATM Forum. Fiber cable options will also be available, according to SynOptics.

SynOptics, in Santa Clara, Calif., can be reached at (408) 988-2400.

— Martin LaMonica is a correspondent with the IDG News Service.

The LattisCell line of ATM products is slated for shipment this fall.

available at year end, officials said.

The 16-port LattisCell 10104 switch has a speed of 155 megabits per second and internal switching speed of 5 gigabits per second. Marketed as a backbone for distances of approximately a mile or for a

Cisco router offers a cheaper path to FDDI backbone

BY TORSTEN BUSSE

Cisco Systems Inc. next month will ship an FDDI interface card for its midrange routers, providing users with an inexpensive way to bridge and route mixed Ethernet, Token Ring, and FDDI networks.

Cisco customers who needed connections to multiple buildings and multiple Ethernet and Token Ring networks could not justify the cost of implementing FDDI, said Tony Moraros, Cisco product manager.

"It would cost you between \$19,000 and \$24,000 to install FDDI," Moraros said. "The Cisco 4000 platform allows users to install FDDI at a cost of \$12,000 to \$16,000."

The three-slot Cisco 4000 router holds one FDDI Network Processor Module; the other two slots accept combinations of Ethernet, Token Ring, and serial interfaces.

The FDDI network processor offers several redundancy and fault tolerance features, including optical bypass switch support, which keeps the FDDI backbone running in the event of ring failure.

Approximately 15 protocols are supported by the router, including TCP/IP, OSI, DECnet, XNS, IPX, Vines, AppleTalk, SNA NetBIOS, and SDLC. The router operates on multimode fiber for distances of as far as 1.2 miles between stations.

The Cisco FDDI router, with one Ethernet and one FDDI module, will ship in April starting at \$12,900. A unit with one FDDI and two Token Ring modules will cost \$16,900. FDDI upgrade kits for existing units start at \$7,900.

Cisco is based in Menlo Park, Calif., and can be reached at (415) 326-1941.



COMPUTER ASSOCIATES
Software superior by design.

DEC's Ethernet cards double performance at half the price

By Vance McCarthy

Digital Equipment Corp. this month begins shipping a series of Ethernet cards that offer twice the performance at half the former price.

DEC's EtherWorks Turbo 16-bit cards for thin, thick, and unshielded twisted-pair wiring are for AT- and EISA-compatible PCs. They use a new proprietary

Application Specific Integrated Circuit chip from DEC to speed operation.

The chip enables the cards to transmit and receive data simultaneously.

"With the old cards, we split the memory 50/50," said Bill Regan, a DEC engineer, in Maynard, Mass. "Half did the transmit and the other half received, and memory could only do one of these at a time. Now, memory is just a pool and

there are no rings to load, which has vastly improved performance."

The chip also reduces the cards' PC memory requirement. They use 2K of PC memory, compared with 64K used by the old cards, Regan said.

The EtherWorks Turbo series works with all popular network environments, including Novell Inc.'s NetWare 3.11 and 4.0, Microsoft Corp.'s LAN Manager,



EtherWorks Turbo cards deliver high performance at a low cost and are easy to install.

Banyan Systems Inc.'s Vines, SCO/Unix from The Santa Cruz Operation Inc., and DEC's Pathworks.

EtherWorks Turbo cards are available now starting at \$155.

Digital Equipment Corp. is located in Maynard, Mass., and can be reached at (800) 344-4825.

Yo, Clipper Fans. Here It Is.
Just Like We Promised. New
5.2 With The Works. New
RDDs. 64 MB Memory.
Better Doc. Better Support.
It's Faster, Smarter And
Stronger Than Ever. So Grab
It And Hang On.
Because Suddenly The
Future Is Looking Very
Bright.

Clipper is back.

Just one year after being acquired by the world's leading application development company, Clipper is once again the standard for Xbase development. And with almost \$2 billion in sales, CA has the resources to keep Clipper—and you—on top. Today and tomorrow. Even while other Xbase standards stumble, falter and fade away.

See your dealer or call
1-800 CALL CAI Ext. 175 for a limited-time upgrade offer of \$149.

It doesn't matter
whether you're a Clipper,
dBASE or FoxBASE user, if
you're into the future of Xbase,
this is one offer you shouldn't refuse.



New CA-Clipper 5.2.

© Computer Associates International, Inc., One Computer Associates Plaza, Bala Cynwyd, PA 19004-1599. 1-800-225-5224. All product names referenced herein are trademarks of their respective companies.

E-mail system gains support for multimedia

By Cheryl Gerber

WASHINGTON — Innosoft International Inc. debuted at Interop extensions to its electronic mail routing system for DEC's Open VMS that support multimedia messages, as well as links to X.400 and Novell Inc.'s Message Handling Service.

With PMDF, Version 4.2, users of DEC Open VMS for VAX and Alpha AXP-based computers can exchange multimedia messages directly with X.400, MHS, and other non-DEC computing platforms.

"If I have an MHS mail handler that is MIME (Multimedia Internet Mail Extensions) aware, I can receive multimedia messages from Open VMS users," a company representative said. "Pure DEC users couldn't do that because DEC doesn't support MIME."

PMDF 4.2 is the first electronic mail handler to be fully compliant with the MIME standard, which lets users send text, graphics, spreadsheets, audio, and video in the same message.

MIME-aware PMDF also adds routing for remote users, including options support to fax machines, printers, and other output devices. There is also an option to let users send E-mail to an alphanumeric pager system.

Users have felt satisfied with past products.

"Previous PMDF products have shown strong backward compatibility, and product support has been excellent," said Mike Sullenberger, a systems programmer at the Stanford Linear Accelerator Center, in Menlo Park, Calif.

PMDF 4.2, which includes MHS support, is available now starting at \$2,790 for an unlimited-user license. Pricing is based on CPU speed.

The optional PMDF-X400 has a three-year licensing fee of \$5,850.

PMDF Fax and PMDF Message Router are \$4,065 for a three-year license.

Innosoft, in Claremont, Calif., can be reached at (909) 624-7907.

**REMEMBER LIFE BEFORE
MICROSOFT WINDOWS?
NOW YOU KNOW
HOW YOUR PRINTER FEELS.**



INTRODUCING THE MICROSOFT WINDOWS PRINTING SYSTEM.

Remember when you very first started to use the Microsoft® Windows™ operating system?

How you could suddenly access powerful features with just the click of a button? How your computer was miraculously talking your language?

How the two of you really started to communicate?



With the Microsoft Windows Printing System, now you can control your printer directly from your PC.

Well, we saw no reason the dialogue should end there.

So now we give you Windows for your printer: the Microsoft Windows Printing System.

Technically, it gives you a graphical user interface for all of your printer's capabilities. In lay terms, it lets you see what your printer's doing.

And it tells you virtually everything. The time it will take your document to print, the size of paper in the tray, whether the printer's out of paper or low

on toner, all the things you really need to know.

What's more, with the click of a mouse, you can easily select formatting options, paper orientation, halftoning, even choose two-sided printing.

The Windows Printing System is also the ideal TrueType® companion. Apart from anything else, it comes with 79 additional fonts.

And in the spirit of honesty in communication, you get true WYSIWYG output. No surprises.

Plus (and it's a huge plus) everything will print much faster. Up to five times faster.

Suffice it to say the Windows Printing System is an easier, faster way to print from Windows. And better yet, it works with Windows 3.1 and Series II or III Hewlett-Packard® LaserJet®.

To find your nearest reseller or to simply find out more, call us now at (800) 426-9400, Department JM5.



Microsoft®
Making it easier

PIPELINE from page 41

SHIPPING

IMC ships expanded line of LANrepeaters

IMC Networks Corp. is expanding its line of Ethernet repeaters with support for 10Base-2, 10Base-5, 10Base-T twisted pair or Fiber Optic Inter Repeater Link (10BaseF/FOIRL) connections. Two- and four-expansion slot models of the LANrepeater Modular Anyway are available for \$340 and \$380, respectively. Port Interface Modules for any Ethernet combination are available separately. (714) 724-1070.

Boca Research Inc. is shipping an external 1.4-kilobit-per-second send and receive fax/modem for the Macintosh. The BocaModem, priced at \$495, supports Group III and Class 1 or 2 send/receive faxing and comes with an LED display to confirm status and operation. (407) 997-6227.

Madge Networks Inc. is shipping next month its SmartCar intelligent hub with add-in modules to support unshielded twisted pair cabling and SNMP network management. Debuted at Interop, the SmartCar/ATP module will cost \$1,995 and allow SmartCar to connect up to 80 workstations into Token Ring networks running at 4- or 16-megabit-per-second rates. Upgrades are free. SmartCar is compatible with IBM 8230 Controlled Access Unit. (408) 955-0700.

UPGRADES

Gandalf adds traffic control to LANline

Gandalf Technologies Inc. is upgrading its LANline 5220 Ethernet bridge with several enhancements for controlling LAN/WAN traffic operations. OptiMiser software, priced at \$700, links remote users at throughout of up to 1T/1E rates. A High Speed Line Driver module for LANline, priced at \$600, connects remote LAN segments over unshielded twisted pair at 512 kilobits per second. (800) 394-4224.

PRICE CUTS

Retix drops prices on router series

Retix Corp. has cut prices as much as 20 percent on its 4900 series of remote bridge/routers, which the company is now positioning as feeder nodes for its RouterXchange 7000 and other lines of high-end routers. The 4941 single-port unit now costs \$4,450, down \$500. The 4942 dual- and 4952 high-performance models were each reduced \$1,000 and now cost \$4,950 and \$5,950, respectively. (800) 255-2333.

PowerBooks to become 'PowerPhones'

BY YVONNE LEE

Next quarter, users can have cellular phones and modems built into their PowerBooks.

Applied Engineering's AErport package allows users to send and receive calls, data, and faxes and run their PowerBooks like answering machines.

The AErport package is designed for mobile workers who want to carry fewer devices. However, most users might be better served by less-expensive external systems, said Noel Holmes, Applied's marketing manager.

"I might not want to take my PowerBook to dinner; I might bring my cellular phone, however," Holmes said.

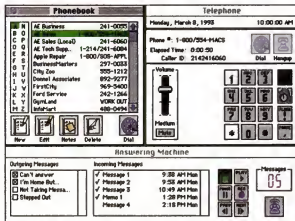
AErport installs the functionality of several existing A/E external packages into PowerBook Models 145 through 180. The integrated package includes the DataLink PB internal V.32bis voice, data, and fax/modem.

dem, and functions from Spectrum Cellular Corp.'s Axcell cellular interface, which translates cellular and standard telephone lines.

AErport also comes with CommPhone software, which includes a phonebook, telephone keypad, and an answering machine that works with the PowerBook's sleep modes. Answering machine features include toll saver and multiple outgoing messages.

The DataLink PB modem allows users to send voice, data, and fax when the modem is connected to the Axcell devices or to a phone line. Users speak into any Macintosh microphone and hear the reply through the built-in speaker.

The Axcell external portable cellular interface connects to any cellular phone and allows users to send data and faxes over these lines. It requires a modem, but not necessarily A/E's DataLink PB modem.



Applied Engineering's AErport is designed for mobile users who want the function of a telephone in their computer.

The AErport internal package is slated to ship in the second quarter for between \$2,000 and \$3,000. The equivalent external devices are available now. DataLink PB with Comm-

Phone software costs \$619. The Axcell device is \$299, and the two can be purchased for \$849.

Applied Engineering, in Dallas, can be reached at (214) 241-0055.

ISDN show debuts multiplexer, cards for U.S. market

BY ELIZABETH HEICHLER

LONDON — The first British trade show devoted exclusively to ISDN this month demonstrated new products, several of which are destined to show up in U.S. enterprises.

Newbridge Networks Ltd. of Newport Gwent, United Kingdom, introduced its TAP Systems ISDN access multiplexers, which can be used as inverse multiplexers for video conferencing connections or as LAN bridges. Later this year the

product will be made compatible with U.S. ISDN standards, company officials said.

The TAP Systems can be managed with Simple Network Management Protocols and are priced from \$7,500.

ISDN cards for PCs were also on view at the show.

Gravatronics Technology Ltd. of Fareham, United Kingdom, debuted its Express S0 card for Toshiba notebook computers. It offers data and voice capability; and it uses Gravatronics software for file transfer, remote PC-to-

LAN connections, and LAN-to-LAN interconnection. Expected to be priced at a little more than \$1,000, the company is seeking approval to market versions modified for the United States.

Symicon Ltd. of Eltham, United Kingdom, manufacturer of X.25 communications cards for PCs, announced the DTSS-19 so users can run X.25 or SDLC/HDLC over ISDN. Device drivers available for the half-height ISA card include DOS, Novell, OS/2, Unix, and Windows. The card costs \$1,943,

and the device drivers range from \$150 to \$900. Symicon distributes its products in Europe and plans to expand to the United States, but it has not yet set a date for first shipment.

Despite differences among U.S. and European ISDN standards, The European Telecommunication Standards Institute is working on bringing a single ISDN PCI to the European market.

—Elizabeth Heichler is European correspondent for IDG News Service.

Vendors deliver devices for easy network printer sharing

BY TORSTEN BUSSE

Digital Products Inc. and Pacific Data Products are both offering network printer sharing devices.

Pacific Data Products is shipping its Pacific DirectNet print server card, which allows NetWare and TCP/IP LAN users to simultaneously access Hewlett-Packard Co.'s LaserJet printers. The \$799 print server card features flash memory, allowing for upgrades and support of additional network operating systems. The card plugs into the optional I/O port for the HP LaserJet III and IIId, or the modular I/O port of the LaserJet 4, IIId, PaintJet XL300, and DesignJet printers.

Digital Products' PrintLink allows as many as 16 PCs to

share a parallel printer on the network by daisy-chaining the PCs and the printer with standard telephone cable. No software or add-in boards are necessary.

A PrintLink network is created by attaching one PrintLink to the parallel port of the PC and another to the parallel port of the printer.

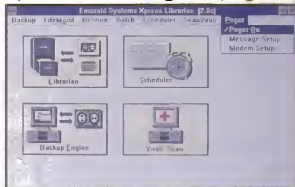
The \$60 PrintLink transmitter for the PC features a DB25 male connector, while the \$65 receiver on the printer has a 26-pin male connector. Couplers to convert a single line to three single outlets are priced at \$5.

Pacific Data is based in San Diego, Calif., and can be reached at (619) 552-0880.

Digital Products, in Walham, Mass., can be reached at (617) 647-1234.

Product Spotlight

Xpress Librarian gains pager



Emerald Systems Inc. is shipping a network and virus-detection add-on to its Xpress Librarian 2.0 power backup and data storage management software package. The pager module will alert a network manager's pocket pager when error or information messages are generated by Xpress Librarian. Priced at \$395, it requires a Hayes-compatible modem. The \$995 virus-detection module automatically scans for viruses in workstation memory and hard disk boot sectors. The operation can be completed prior to log-in. (800) 767-2587.

What is the true object of ObjectView™?

Rapid development of client/server applications. Unlimited power. No client/server package should give you less. And none gives you more than ObjectView from KnowledgeWare®.

Only Windows™-based ObjectView combines power and speed with extraordinary ease of use, enabling rapid development of robust applications that provide point-and-click access to SQL and non-SQL databases. ObjectView gives you a choice of a powerful BASIC-like 4GL or C or C++. Speed from prototypes to finished applications without rebuilds. Plus, you have an interactive code debugger and support for tracing communications between the client and server. Push button builds of business graphs. Spreadsheet objects with Excel™-like capabilities.

Still not perfect? Complete

control over inserts, updates and queries lets you tweak even the most complex transaction-intensive application.

Depend on KnowledgeWare for proven tools to turbocharge your move to client/server. Our unequalled experience and expertise back you with comprehensive consulting, training and technical support services.



Israel Littman, manager of management analysis for Con Edison's Central Engineering Department, used ObjectView to develop a management/engineering information system.

The application, which accesses budget, resource, project and performance data, helps managers immediately identify exceptions before they turn into major problems.



KnowledgeWare®

KnowledgeWare and ObjectView are registered trademarks of KnowledgeWare, Inc. All other trademarks belong to their respective holders. ©1993 KnowledgeWare Corp., all rights reserved.

KnowledgeWare offers FREE ObjectView and Flashpoint seminars and FREE demo diskettes. Call us today at (800)338-4130 or (404)231-8575.



\$3,280

KINGSTON PROCESSOR UPGRADES.



Significant Savings, Equivalent Performance.

Kingston's SX/Now!,
486/Now!, MCMaster,
ATMaster and the

IBM designed SLC/Now! processor upgrades make existing systems perform like new 386SX, 486SX or 486DX models. They provide the power needed for today's software, perform comparably to new systems and cost at least 50% less.



Eliminate Peripheral Replacement and Software Reinstallation.

When upgrading with Kingston, existing peripherals will remain fully compatible with host systems. Reinstallation of operating system and application software is eliminated.

SX/Now!	IBM AT	With SX/Now! 25	PS/2 Model 57SX-045
Landmark Speed 2.0:	8 MHz	35 MHz	22 MHz
Recount:	5:44 Min.	1:51 Min.	1:54 Min.
Retail Price:	\$215	\$215	\$1,545
SLC/Now!	PS/2 Model 50	With SLC/Now! 25	PS/2 Model 57SX-045
Landmark Speed 2.0:	13 MHz	33 MHz	22 MHz
Recount:	3:34 Min.	1:08 Min.	1:54 Min.
Retail Price:	\$245	\$245	\$1,545
486/Now!	PS/2 Model 70-25MHz	With 486/Now! SX 25	PS/2 Model 90040 SX 25
Landmark Speed 2.0:	39 MHz	84 MHz	84 MHz
Recount:	:55 Sec.	:39 Sec.	:38 Sec.
Retail Price:	\$495	\$495	\$3,280
MCMaster	PS/2 Model 55SX	With MCM SX 25	PS/2 Model 90040 SX 25
Landmark Speed 2.0:	16 MHz	84 MHz	84 MHz
Recount:	2:47 Min.	:36 Sec.	:38 Sec.
Retail Price:	\$795	\$795	\$3,280
ATMaster	PS/2 Model 40	With ATM SX 25	PS/2 Model 90040 SX 25
Landmark Speed 2.0:	21 MHz	84 MHz	84 MHz
Recount:	1:48 Min.	:45 Sec.	:38 Sec.
Retail Price:	\$875	\$875	\$3,280

All prices listed with 10MB installed except ATMaster listed with 8MB, and MCMaster listed with 8MB on mother board. All prices are MSRP at standard configuration as of 2/92. Processor upgrade prices are MSRP as of 5/92. Source: conducted on 300 Euro for Processor upgrade/retail prices by Kingston Technology.

Systems Supported.

Kingston's SLC/Now! supports IBM's 286-based systems while SX/Now! supports 286-based systems from AST, Compaq, Epson, Hewlett-Packard, Toshiba and Zenith. 486/Now! upgrades 386DX systems from IBM and Compaq. MCMaster supports all IBM PS/2 Micro Channel systems while ATMaster supports 386SX systems from IBM and Compaq.



**Leadership in
Processor Upgrades.**
Kingston is the industry
leader in performance
and reliability. Byte
Magazine's 1992 Award of Merit was presented
to MicroMaster, the forerunner of the MCMaster.



\$495

SAVE YOUR SYSTEM AND A BUNDLE.



Compatibility is Assured.

Testing with the original manufacturer's diagnostics guarantees 100% hardware and software compatibility. The National Software Testing Laboratory certifies that Kingston's upgrade products are fully compatible.

Both SXNow! and 486Now! are currently certified by The National Software Testing Laboratory. Certification for recent introductions, MCMaster ATMaster and SLCNOW!, is pending.



Easy Installation.

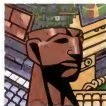
MCMaster and ATMaster upgrades install in any available expansion slot. SLCNow!, SXNow! and 486Now! plug directly into the existing processor socket on the mother board. With Kingston's product manuals that detail the simple, step by step installation, it only takes about 10 minutes to complete the process.

Individual Product Testing.

Every product is bench tested in the system for which it was designed. Testing with original equipment manufacturer system diagnostics assures absolute compatibility.



This rare commitment to quality control leads to many years of reliable service.



Kingston Reliability.

Processor upgrade users enjoy the same reliability customers have come to expect from Kingston memory products. Every product is individually tested prior to shipping, supported by free comprehensive technical assistance and backed by a five-year warranty. Thanks to this relentless scrutiny, we have over 5,832,717 products hard at work in the world today.

More Information.

To find out which processor upgrade is best for you, contact your nearby Kingston dealer or give us a call at (800) 835-6575.

[800]

We'll be happy to answer your questions about processor upgrades or any of our other 625 upgrade products.

Kingston
TECHNOLOGY CORPORATION

THE INSIDE NAME IN UPGRADES

17600 Newbope Street, Fountain Valley, California 92708 (714) 435-2600 Fax (714) 435-2699

All Trademarks, Registered Trademarks and Logos are of their respective holders. Kingston and Kingston Technology are Registered Trademarks of Kingston Technology Corporation. MCMaster & ATMaster are Trademarks of Asa, Inc.



LAN Talk / Paul Merenbloom

It's time to take another look at your NetWare shell strategy

be time for a change.

Back in the early days of NetWare (2.x), Novell used a single-protocol ap-

proach. Using the SHGEN utility, administrators built an IPX.COM for each network interface card (NIC). The build process was often a time-consuming and frustrating task, requiring intimate knowledge of each personal computer's DMA, IRQ, and I/O address utilization.

The result of this process was often tens (if not hundreds) of different IPX

configurations. To make matters worse, in order to stay current, this headache was repeated each time new editions of Novell's IPX or vendor-specific object files were released.

During the middle of the NetWare 3.1x period, Novell formally launched its solution to the configuration headache. Called Open Data-Link Interface (ODI),

it has replaced the older single-protocol IPX SHGEN/WSGEN utilities and vendor-provided OBJ files with a more flexible approach.

The new suite includes the LSL (link support layer), Card Driver, IPXODI (protocol stack), and NETX (shell). The No. 1 feature of this approach is its modularity. Unlike the older SHGEN/WSGEN approach, each of these programs is modular, and can be loaded into high memory. And none of these programs requires customization.

If changes occur to LSL, then you simply replace the old edition with the new. The same goes for the card driver (often provided by the vendor), IPXODI, and NETX modules. All customization that was formerly "hard-coded" into the IPX.COM program now resides in a NET.CFG file.

In addition, the NET.CFG file can contain support data for multiple NIC drivers, protocols, etc. When the card driver is loaded (i.e., TOKEN.COM for IBM Token Ring cards) the appropriate sections of the NET.CFG are used and others are ignored.

So, with some effective planning, you can create just a few master NET.CFG files for all of your machines (they still have to be customized for Long or Short machine type).

In addition, Novell's ODI model greatly simplifies the multiprotocol headache. Through tools like LAN Workplace for DOS (LWP), access to TCP/IP and DE-PCA (Path Works) systems is provided easily.

Thus, we can remove the IBM LAN Support modules DXMACMOD.SYS and DXMACMOD.SYS from the CONFIG.SYS, as well as any other "fixed" multiprotocol specific drivers and programs. By removing these files, we recover precious conventional RAM and reduce some overhead as well.

Just add the "TCP/IP:" section to the NET.CFG file(s) and load the "Protocol TCP/IP:" and "Link Driver" to dynamically load and unload these files on individual PCs.

Proponents of Microsoft's NDIS specification may say, "Big deal. NDIS has had multiprotocol support for a long time." Although this is true, and the NDIS product is well supported, if your company's LAN operates in the NetWare world more than 50 percent of the time, I would say you should reduce the support headaches and use the Novell tools (as long as they make sense).

It all boils down to planning, time, and vision. If you plan the conversion to ODI and begin it now, you will be in great shape in the future. Novell will be better able to support you, and you will benefit from smaller code, better memory management, and operational efficiencies.

If you choose not to change over now, consider the opportunity cost of putting this off. Remember, Novell is moving ahead and has announced no further development of the SHGEN/WSGEN model. As I see it, a failure to plan will be a plan to fail.

Paul Merenbloom is a manager of information technology at Otsuka America Pharmaceuticals, in Rockville, Md. Send comments to him via CompuServe at 70743,3524 or via MCI Mail at Paul Merenbloom.

When It Comes To CD-ROM, We're for Multiple Choice.



Chinon's Complete Family Of Quality CD-ROM Drives.

Chinon has just the CD-ROM drive you need—from basic to state-of-the-art.

The 431 series offer unbeatable price/performance in an entry-level drive.

The 435 series drives are fully MFC and Quicktime compatible, with a 64KB data buffer and single-session Photo CD capability. They are multimedia performers that won't bust your budget.

The new 355 series of 3 1/2" drives are XA compatible, and will read Sony DataDiscman discs, audio 3 1/2" CD's, or any new software written in the 3 1/2" format.

Our exciting new 355 series drives earn their place at the top

of the line. They offer dual speed performance, are multisession Photo CD and XA compatible, and have a huge 256K data buffer. Double doors and a sealed mechanism protect your data from dust.

All Chinon drives have a reputation for rugged construction and rock-solid reliability. And Chinon quality always comes at a very competitive price. So call today for the reseller nearest you—and make the right multiple choice.

CHINON

The Drive to Succeed

Chinon America, Inc., 615 Hawaii Avenue, Torrance, CA 90503 Toll-free (800) 441-0222 In California (310) 533-0274

Sony and Discman are trademarks of Sony Corporation.



ALL-IN-ONE PACKAGE!

CorelDRAW has six graphics packages in the stunning Windows program. And these are not watered down versions—they compete feature for feature against stand alone products."



VERSATILE CHARTS and GRAPHS!

CorelCHART is the easiest charting package you've ever used, thanks to its intuitive design, ease of object editing, and the smooth integration with the rest of Corel's products."



POWERFUL PHOTO-EDITING!

CorelPHOTO-PAINT is in a class by itself; no other product can match its image editing powers for close to its price range."



THOUSANDS OF CLIPART IMAGES AND SYMBOLS!

"Even if you only use a portion of the 256 fonts or 14,000 CD-ROM clipart images, you've likely recovered your investment."



COREL DRAW!

"The Graphics Super Star"



Suggested list price.

\$595

WINNER OF OVER

90

FIRST PLACE AWARDS

Call now for a free demo disk and brochure!

1-800-836-DRAW

CD/TEL: (613) 728-8200 / FAX: (613) 761-9176



EASY TO USE!

"CorelDRAW remains the easiest-to-use graphics product on the market...The ultimate graphics bargain!"



VALUE-PACKED!

"CorelDRAW 3.0 for Windows delivers all the graphics applications you could ask for. The program's ease-of-use, coupled with its power, has users singing its praises."



DYNAMIC PRESENTATIONS!

"CorelSHOW, an extremely simple presentation program that makes displaying charts and drawings a snap."



GREAT TEXT HANDLING!

"CorelDRAW has what many other drawing packages lack: superb control over type...A sizzling best buy."



CorelDRAW is Network Ready and MULTIPLATFORM for corporate standardization: Windows, OS/2, UNIX, CTOS. And soon available on the Mac and in 20 languages!



MAR 0012

CorelDRAW has emerged as the ALL-IN-ONE graphics Super Star! Celebrated by top international industry publications, it has won over 90 awards for its ease of use, incredible value and outstanding features.

CorelDRAW 3.0 outshines the competition! There is no longer any need to buy separate illustration, charting, photo-editing and presentation software, because CorelDRAW 3.0 includes CorelCHART, CorelPHOTO-PAINT and CorelSHOW—all in one value-packed box.

No wonder CorelDRAW is the world's best selling graphics package!

Circle 11 on Reader Service Card

TO THE EDITOR

Foxes and hounds

I was more than a little exasperated by the comments of Mr. Yasinowsky with respect to FoxPro for Windows that were quoted in your article "dBase delays dear Borland." (March 1, page 1). While FoxPro for Windows is obviously a part of the DOS product, it is definitely a "real" Windows product because the DOS version was designed from the ground up to fully implement the event-driven, graphic user interface that is the essence of Windows.

FoxPro for Windows is stunningly beautiful software and immediately evidences the true genius of the design of the DOS version from which it emerged. Perhaps more important, even the beta test version was fast — it handled serene updates at least as quickly as the character-based DOS version. And FoxPro for Windows implements DDE and OLE as fully as any other "real" Windows products.

How anyone could seriously refer to Borland's dBase for Windows as a "mature," real Windows product is beyond me. My advice to anyone who wants an Xbase DBMS for Windows is to try FoxPro for Windows.

Ronald H. Hodges
Senior Systems Engineer
Computer Data Systems Inc.
Rockville, Md.

Am I Blue

As a retired IBMer, I appreciated reading Cheryl Currid's candid comments about her respect for the IBM sales force in the February 15 issue, which described her decision to buy non-IBM equipment ("Big Blue's strong-arm tactics have gone the way of the 286," page 56). It really does help to understand her subsequent column (February 22). I wonder if she wears spiked heels or Nike running shoes.

My mother (and IBM) taught me that if I couldn't say something good about someone, say nothing at all. Enough said.

I really enjoyed the Peer to Peer by Bruce Riddle, and Mr. Cringely is always good for a smile or two.

Doug Johnson
Lookout Mountain, Tenn.

If only the lessons that IBM taught me were as valuable as those my mother taught. Now, excuse me as I go to face up my Dr. Martens. — Cheryl Currid

Improved Blue

It appears that Cheryl Currid is still bitter from experiences with IBM years ago. As a result, she is making the most tragic mistake of a consultant in the information industry: basing her professional recommendation on past experiences, not current industry information and trends. Currid should take note of one of the newest parts of IBM, that being the IBM Personal Computer Co. The IBM PC Co. is the most exciting and encouraging sign of what we can expect the new IBM to look like. Since last September, the PC Co. has revamped its "one size fits all" strategy and has focused on new mar-

kets with new products, most notably the ThinkPad 700C. Let's get with it, Mr. Currid. IBM is on the upswing.

Dominic J. Camden
IBM
Milwaukee

My columns didn't say a word (good or bad) about IBM's Personal Computer Co. In fact, I believe the jury is still out on this group. From what I have seen so far, I would agree with your letter — its product line is the best in years. But time will tell if it can effectively compete in the renegade, make-it-happen-now market-place. I'll keep an eye open and update you on my thoughts in future columns. — Cheryl Currid

NT networking

After reading your March 1 article on Microsoft's incomplete implementation of TCP/IP's full suite in the latest Windows NT beta, I'm again reminded that Microsoft will only support a standard when it doesn't conflict with its proprietary nature. (See "Beta users push Microsoft to beef up NT networking," page 1.) Microsoft is now pushing its mail product rather than including SMTP, and it is removing the common IBM 3270/3279 Telnet emulations. Heaven help the organization that buys into Microsoft's thinly veiled lies about commitments to openness. Redmond should realize that IBM, DEC, et al failed because they didn't offer their users an option. Right now, Microsoft is looking at the same fate.

Rob Carr
AMR/American Airlines
Fort Worth, Texas

Holding us accountable

I'm bothered by a number of statements in Ed Foster's and Steve Gibson's columns of February 22 (page 49 and 37, respectively). InfoWorld appears to pride itself on its ability to review hardware, software, and systems, and yet it is left up to Steve Gibson to (1) identify the problem with cheating video drivers, and then (2) set policy to personally reveal their identities to the world. Where has InfoWorld been all of these years? Incapable of detecting the cheating? Unwilling to reveal the problems in InfoWorld reviews? What good were those reviews all of these years?

And then Ed Foster says, "InfoWorld cannot tell Steve Gibson how to run his business" when discussing Gibson Research's practice of charging customers prior to shipping product and then delaying product shipments. This is nonsense. InfoWorld regularly tells many vendors "how to run their business" by setting standards for InfoWorld reviews. Vendors scurry to meet InfoWorld recommendations.

I say InfoWorld has let us down again. InfoWorld certainly can state that it will not give favorable reviews to any vendor that charges customers prior to shipping.

Jon Bondy
JLB Enterprises Inc.
Ardmore, Pa.

It should be understood that the Win-

bench benchmark Steve Gibson has been discussing in his column is used by a different publisher, not InfoWorld. Our Test Center has never used Winbench for our own reviews and does not endorse it. No benchmark can be made totally cheatproof, but we believe applicable-based tests such as SYSmark92 and the other tests we use for hardware performance are more reliable than those that measure particular subroutines.

InfoWorld certainly does attempt to use its influence to get all vendors to adopt better sales and support policies. However, all we can do through our news stories, reviews, and columns is inform our readers of the facts and let them decide whether they want to do business with a particular vendor or not. That was my purpose in writing about Gibson Research's sales practices with SpinRite 3.1. Judging from the responses it received, both positive and negative, our readers are indeed making up their own minds. — Ed Foster

Apple Talk

I just read David Ström's March 1 column about "buying networks retail" (page 50). While he mentions Apple, he apparently missed that Apple has been selling networks for years, and you could walk into "your local Apple dealer" and buy their right off the shelf. Of course, this has been mostly LocalTalk cabling, but they've been selling their Ethernet cabling system for well over a year now. Apple's thin-wire Ethernet system is even self-terminating, and you can buy longer precut lengths if the cable that came with the transceiver wasn't long enough.

Apple also sells some Macs with 24 megabytes of RAM, 1-gigabyte hard drives, and built-in Ethernet. The only thing you can't buy (yet) is Apple's server software, AppleShare, loaded.

Of course, it's not cheap, but my point is just that you can buy networks retail.

Dave Caplinger
Network Manager
Ornt Graphics
Omaha, Neb.

Which group

I believe you overlooked an important reason for the poor sales of Windows for Workgroups. (See "WFW selling slowly despite market blitz," February 15, page 1.) With the network interface built into Windows, the user must be in Windows to communicate with the network. Hardly anyone works in Windows 100 percent of the time.

Users need full-time network communication, and WFW does not provide that. Robert J. Sandler
Wayne, N.J.

Please write to Letters to the Editor, InfoWorld, 1555 Bove Road, Suite 800, San Mateo, CA 94402; MCI Mail: 259-4127; CompuServe: 73267.1537; Internet: Letters@infoWorld.com. Letters may also be faxed to InfoWorld at (415) 350-1269. Please include your name, address, and daytime telephone number. Letters selected for publication will be edited for length and clarity.

INFO WORLD

Editor-in-Chief: Stewart Alsop
Editorial Director: Michael Lovell
Editor: Ed Foster
Assistant to the Editor-in-Chief: Kristin Kuster

NEWS & VIEWS

Executive Editor: Robert Jones
News Editor: Judy Gurley
Opinions Editor: Rachel Pank
Editor at Large: Scott MacFarlane
Associate News Editor: Cheryl Currid
Senior Editors: Doug Barry (Boston), Cheryl Currid
Jim Hammett (Southwest), Vance McCarthy (Networking), Tom Quinlan (Hardware), Mark Stephens (Software)
Business Chiefs: Steve Polk (Dallas)
Ed Scanlon (East)
Assistant News Editor: Karen Rodriguez
Senior Writers: Jeanette Smith, Jordan Buehl
Cate Conroy, Janet Demore, Yvonne Lee
Shawn White (Business), Jayne Wilson (Retail)
Research Editor: Janet Darling
Editorial Assistant: Kate Drang
Administrative Assistant: Shirley French
Field Editor: Robert A. Cringely
Contributing Editors: Cheryl Currid, Steve Gibson
Brent Glass, Ben Livingston
Paul Merenscoff, David Ström

ENTERPRISE COMPUTING

Executive Editor: Neil Scott
Senior Editor: Doug Ström
Contributing Editor: Alice LaPointe

REVIEWS & TESTING

Executive Editor: Kevin Ström
Reviews & Testing Manager: Dan Ström
Reviewer Editor: Carla Matthews
Senior Editor: Steve Irwin
Team Leaders: Elizabeth Evi, Senior Editor (On Leave)
Anna Kalkas, Associate Editor (Hardware, Networking)
Andrea Niles, Analyst (Semiconductors, Communications)
Nicholas Petresky, Senior Editor (Enterprise)
Dave Walter, Test Developer (Hardware, Systems)
Jin Welch, Analyst (Test and Development)
Senior Test Developer: Rob Ward
Test Developers: Peter Chu, Tim Crawford
Victor Garza, Vince Ngudhar
Nile Carlson, Test and Graphics
Associate Editors: Ann Marshall (Semiconductors, Communications)
Sobhan Nash (Hardware, Systems)
Assistant Editor: Karen Bighly (Reviews)
Senior Systems Analyst: Neil Cringely
Systems Analyst: Lauren Wonnacott
Technical Analysts: Earl Anglin, Rod Chapman, Ean Houts
Patrick Lyons, Jeff Symons, Jeff Van Ours
Andrew Yarnall, Tim Tully
Network Administrator: Rodney Gable
Inventory Controller: Andrew Mattia
Administrative Assistant: Lena Simon
Contributing Editors: Denise Green, Doug Green
John Lombardi, Patrick Marshall, John Wiedenbach

EDITORIAL PRODUCTION

Managing Editor: Bob Kaye
Art Director: Ben Bartolucci
Associate Managing Editor: Tricia Harris
Associate Art Director: Sarah Bernstein
Chief Copy Editor: Becky Ford
Illustrator: Greg Breen
Copy Editors: Bob Gale, Mark Green
William Kibben, Stephen Lawton
Layout Designer: Lucy Laine
Contributing Photographer: Gerald Zager
Proof Production Editor: Greg Breen
Post-Production Assistant: Salsia Annarovero

EDITORIAL EVENTS

Director: La Lorenzano
Special Events: Carolyn Hill
Coordinator: Tracy Moore

CORPORATE ADVISORY BOARD

Sally Adams, John Chapman (Anco), Marylyn Henry (APC), Bob Karp (Braniff), John Karp (Braniff), Jerome Karp (Braniff), Phyllis Karp (Braniff), Karl Konrad (Richter), Sheldon Laube (Price Waterhouse), Jon R. Risher (Federal Express), Keith Stevens (Federal Express), John Tomlinson (Southern California Edison), Douglas E. Welch



From the Editor / Ed Foster

Borland's upgrade pricing creates a paradox all its own

This week we look at a gripe of a different stripe.

From the moment we opened the gripe line, I've seen a number of complaints from recent upgraders to Borland's Paradox for Windows. In most cases, they seem happy enough with the product and are generally satisfied with the support they've gotten. What bothers them is the price they paid to upgrade from the DOS version of Paradox: \$139.95.

Now, on the surface \$139.95 doesn't seem like a bad price for an upgrade to a major new release of a database management system. But it's not quite as attractive when you consider the introductory price for those who've never purchased a Borland product in their lives — \$139.95. "I've seen it advertised as low as \$112 at the discount stores," noted one irate griper. "I actually have to pay more for my upgrade as a loyal Borland customer than the price anybody can get on the street."

All these grippers described themselves as loyal Borland customers. They use not only Paradox but also Quattro Pro and/or some Borland language products as well. But they clearly feel that their loyalty has been betrayed. "We're looking at dropping Paradox completely," said another griper. "We purchased it in good faith, and we think we should get upgrades at reasonable prices."

Borland officials, of course, feel that \$139.95 is a reasonable upgrade price, and no one would have been unhappy if Borland hadn't also offered the product to the general public at the same price.



And it's no secret why the company chose to do that: It had little choice after Microsoft brought out Access at an introductory price of \$99.

One Borland representative tried to reason that as a 1.0 release, Paradox for Windows isn't really an upgrade. "It is an entirely new product on an entirely new platform, and as such has no existing customers," she said.

That argument doesn't hold much water, though, because last year Borland promised that those upgrading from Paradox 3.5 for DOS to 4.0 would qualify for a "special" \$139.95 upgrade to the Windows version. "There's no need to send any money for Paradox for Windows now," read the offer. "Simply order Paradox 4.0 for DOS and you'll automatically qualify for this tremendous discount."

So, it's easy to understand why those who took Borland up on that deal might be a little upset now to discover their tremendous discount is worthless. "I probably wouldn't have bothered to get the 4.0 upgrade if I'd known this would happen, because what I really wanted was the Windows version," says one griper.

Still, I have to admit to feeling a certain amount of sympathy for Borland. It had to respond to Microsoft's cutthroat pricing on Access or let Paradox for Windows die. The company had to offer new users the lowest price possible.

But it could also have handled its DOS Paradox customers better. If nothing else, offering them some token advantage over new customers would

have been wise. (Grippers calling Borland are offered some free software and discounted add-ons, but those deals are also available to anyone who calls to order Paradox for Windows.)

David Watkins, Borland vice president of product marketing, says the company has learned a lesson and next time will make sure its existing customers get something, even if it's only a very small discount. But with all the aggressive promotional pricing we're seeing, this is a situation that's going to be more and more common, he says.

"You see all kinds of offers in the industry now trying to entice people to stay or switch," Watkins says. "I think we're going to probably see a reset of expectations as people get used to these new pricing models."

I think he's right about that. It's common now for vendors to offer users of competing products a great price to switch, so you don't have to be a loyal customer to get the best price. You just have to be part of the target market.

That's obviously a good thing for those of us who buy software. I think, however, there's a bigger issue here than a matter of a few bucks, and it's an issue that really runs as a common thread through almost all the gripe line calls.

It's the question of loyalty. Not customer loyalty to a vendor, but vendor loyalty to its customers. That's something we'll discuss further next week.

Ed Foster is editor of InfoWorld. He gets electronic mail at MCI account 584-3453. Or, you can call (800) 227-8365, Ext. 710, to report a gripe you have with a vendor.

Peer to Peer / Dr. Phillip Anderson

You, the consumer, can save the industry from Microsoft's domination

Dr. Phillip Anderson is president of PC Research Corp., a consulting firm in Payson, Ariz.

It is popular to criticize Microsoft for preying on the smaller software companies, which flourished by making up for obvious oversights and omissions in Microsoft's systems products. Now that this "accessory" market is a multibillion dollar industry, Microsoft naturally enough wants it back — preferably all of it.

But we have a major software dilemma: The capability and limitations of almost all software is dictated by what Microsoft may do next. But blaming Microsoft is only evading the real issue: You, the MIS manager, systems integrator, reseller, and computer user, are all to blame for our current dilemma.

Before you get mad, let me explain. A friend once observed, "Microsoft has never been able to design a program that makes sense to most people. Their 'logic' doesn't follow the rest of the world."

Think about it: The essential layout of DOS, Microsoft's most successful product, was purchased, not designed, by Microsoft. Windows follows Apple's (or PARC's) interface and is not original. Virtually all new technology added to DOS 3, and now DOS 6, has been licensed or copied from others in the DOS

utility market. Had Microsoft written DOS itself, we would surely be running Basic as the DOS of today.

Ironically, our software industry is being led by a giant that is not a leader in innovative development. The dozen greatest software innovations in the past 10 years have all come from companies developing DOS utilities and related products. And now those products are being put in DOS to embellish it.

So how are you personally responsible?

In essence, demanding compatibility stifles innovation — and we are all guilty of it to varying degrees.

ble for all this? Look at your computer. Does it "work" the way your mind thinks? Does it actually do things the way you want them done? Is it really intuitive to use, or have you just learned to adapt to its limitations and idiosyncratic way of doing things?

Today we demand that everything be DOS and/or Windows compatible (even OS/2). Because we demand such close compatibility, the software vendors are forced to write under the limitations of

DOS and/or Windows. But DOS and Windows are too narrowly conceived to allow programs to do things as we would do them. In essence, demanding compatibility stifles innovation — and we are all guilty of it to varying degrees.

I'm not suggesting you jump into Unix or another platform, and no, don't put your hopes in Windows NT — it will be just another product conceived in the same old idiosyncratic Microsoft way.

Instead, we need to realize that we are

all personally responsible for the dilemma our software industry faces. The dream of having "everything for free, bundled into DOS" is not only a false economy, but counterproductive to future innovation. If you don't support the fledgling companies that think up fifty new ideas, you'll never see any fifty new ideas. If you don't support the software developers who dare to do things differently so they can bring you great innovations beyond the scope of

DOS and Windows, you'll be tied to the DOS or Windows world forever.

If you abandon independents' products for the deceptive "everything bundled free in DOS and Windows" syndrome, you will soon have a software future dictated entirely by Microsoft, with no other products at all to choose from. Take a stance now on what you buy and who you buy from. Otherwise, tomorrow you may not have such freedom of choice.

You, as a lone software buyer, or as one who sells to or advises others, can have more of an impact than you ever realized on the current monopoly. Pass up the "all-in-one" deals from big companies that obviously are trying to kill their competition. Instead, support those you see as the best innovators of the types of programs you need. That way, you'll not only buy the best products, but you'll also keep future innovation going strong. The added bonus for this strategy is that you are guaranteed continued freedom of choice in future software selections.

"Peer to Peer" gives readers a forum for discussing computing and management issues. Send submissions to Rachel Parker, Opinions Editor (MCI Mail 340-4374). Submissions can also be faxed to (415) 358-1269.

Apple a a higher standard

Introducing the LaserWriter[®] Pro 600 and 630 printers from Apple.

Never before have workgroup printers this affordable produced this level of output.

Offering you true 600-dot-per-inch resolution, they deliver more than four times

the definition of comparably priced 300-dpi printers.

Both models

incorporate an Apple breakthrough in gray-scale printing called PhotoGrade.[™]

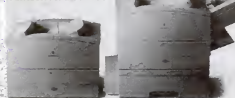
The LaserWriter Pro 600 and 630 feature PhotoGrade, an Apple breakthrough allowing you to print up to 91 levels of gray—that's 35% more grays than with our award-winning LaserWriter II^g.

A process that intelligently adjusts the size and position of every dot in relation to neighboring dots, allowing you to print up to 91 levels of gray at 300 dpi.

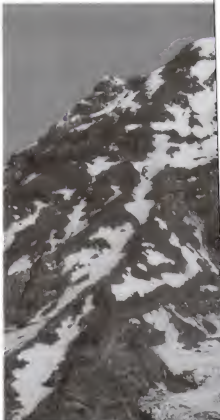
That's equivalent to a 1,000-dpi printer costing mountains more.

The result is noticeably sharper details and the ability to reproduce the subtle tones of gray in black-and-white photographs.

But even when you don't integrate photos into your documents, you'll still notice the difference. Because



Both LaserWriter Pro models come with two paper trays and a host of paper-handling options, including a 500-sheet feeder and a 75-envelope feeder.



Apple's FinePrint[™] technology gives your text and line art cleaner edges and smoother curves. So your TrueType[®] and PostScript Type One fonts have never had more impact. Any way you look at it, your work looks better coming out of a LaserWriter Pro.

Two paper trays come standard, along with an array of options including a 500-sheet feeder and a 75-envelope feeder for a total paper-handling capacity of 850 sheets.

© 1993 Apple Computer, Inc. All rights reserved. Apple, the Apple logo, LaserWriter, Macintosh, and "The power to be your best" are registered trademarks, and TruePrint, PhotoGrade and the trademarks of Apple Computer Company, Inc. are registered trademarks of Apple Computer Company, Inc. "500 Power and America's 1993 Computer Best User Satisfaction Study" are trademarks of International Data Corporation.

nounces of laser printing.



You can also select and switch paper trays right from your computer and print a letter, complete with second sheet and envelope, without ever leaving your desk.

No other printer in the industry allows you to do so much so easily for so little.

For high-performance networks, the 630 features built-in Ethernet. So you'll be

able to move even the largest, most complicated image files and print them at speeds rivaling any RISC-based printer.

And if you happen to work in a mixed environment, both LaserWriter Pro models fit right in. They support PCL page description language and can easily accept jobs from Macintosh® and Windows-equipped computers simultaneously.

They also provide you with something that no other printer in the world can: Apple's renowned plug-and-play simplicity.

LaserWriter Pro 630 vs. HP LaserJet 4M

Price:	\$2,529*	\$2,999*
Gray levels:	91	51
Macintosh fonts:	64 TrueType	None
	35 PostScript	35 PostScript
PPM:	8	8
Ethernet:	Built in	Optional
RAM:	8MB	6MB

In fact, Apple® LaserWriter printers were recently ranked highest in Overall Laser Printer Customer Satisfaction by J.D. Power and Associates®. Outranking Hewlett-Packard.

To see why, visit your authorized Apple reseller for a full demonstration.

You'll find that the LaserWriter Pro has the power to elevate your work to a level ordinary printers can only aspire to.

The power not just to look your best. The power to be your best.®

The new LaserWriter Pro series from Apple. 

Apple Computer, Inc., Apple, PostScript and the PostScript logo are trademarks of Apple Computer, Inc., registered in various jurisdictions. Hewlett-Packard, LaserJet and PCL are registered trademarks of Hewlett-Packard Company. *Suggested retail price. Actual output may vary. The actual output may vary. Macintosh is a registered trademark of Apple Computer, Inc.

From the Ether / Bob Metcalfe

Shareware should not be shunned at all



Shareware should be of great interest to PC managers because it's a good model of how we'll

all acquire software in the future — and because shareware is yet another reason for migrating to ISDN and object technology.

In my February 1 column (page 46), I was regrettably snide about shareware as it is today, likening it to amateur open-heart surgery. (This brought me more angry E-mail in a week than I can read in a month.) However, I do believe shareware is an important marketing and distribution alternative for small profit-seeking software entrepreneurs, among whom I care a lot.

One such entrepreneur is PC-Write developer Bob Wallace. I met Bob in Seattle at one of our Editorial EXPOS — events intended to bring our editors and readers closer to small companies.

Bob was introduced to me as the father of shareware, but then he quickly blurted out that he got the term from, of all places, *InfoWorld*. Indeed, "shareware" first appeared in print on May 30, 1983, in *InfoWorld* in an article by Jay Lasker, in which he renamed shareware.

Later in 1983, Bob founded Quicksort Inc. ([800] 888-8088), which today derives most of its \$1 million per year in sales from shareware registrations of PC-Write. PC-Write is also available shrink-wrapped through retail.

PC-Write has 500,000 users, of which 50,000 have registered at about \$100 each. Bob doesn't view his 450,000 unregistered users as free riders or software pirates. Instead, Bob sees them as a promising pool of PC-Write prospects.

InfoWorld encourages readers to contribute their opinions for publication. When sending letters for publication, please send them to Letters to the Editor at my physical address or fax number (see below) or to letters@infoworld.com on the Internet. For information about *InfoWorld*'s reader and advertising services, including full-text access on-line and on CD ROM, please turn to the Reader Services Page immediately following the InfoMarket section.

**Telephone:**

InfoWorld has a human being on a switchboard during the day (an increasingly rare phenomenon, we find). Call (415) 572-7341 or (800) 227-8365 between the hours of 8:30 a.m. and 5:30 p.m., Pacific time, Monday through Friday. After 5:30 p.m., our voice mail system will allow you to reach a particular extension if you know either the extension number or the last name of the person you want to reach.

InfoWorld also maintains news bureaus around the United States, as follows: Seattle (206) 641-7770; Boston (508) 879-0700; Ext. 710; Washington (410) 379-9313; and Dallas (214) 233-4876.

**Facsimile:**

Our primary editorial facsimile number is (415) 358-1269. We also have a fax gateway on our electronic mail system (from which the faxes must be forwarded to the

recipient by a human administrator): (415) 358-1270.

Electronic mail: We try to provide as much electronic access to our staff as possible. We think just about anyone with some form of electronic mail should be able to get a message to us through one of the four following systems.

Internet: We have a gateway between our internal mail system and the Internet. When sending a message through the Internet, use the following form: firstname.lastname@infoworld.com. We have listed our staff on our editorial and business mastheads in the form that they are listed in our internal mail system, so you can use the mastheads as a guide for addressing Internet messages correctly. Please include your full Internet address in the text of your message in case the reply field on your original message gets garbled during transmission so that we can be certain of replying to your message.

Unfortunately, users of one commercial E-mail service cannot use the Internet to send messages to users of another commercial E-mail service, so customers of AT&T Mail (Easylink), CompuServe, and other commercial mail services cannot send messages to "mcmal.com."

But I again say that for shareware to flourish we need operating systems —

such as Unix, OS/2, and NT — with firewalls to protect us from bugs. And we need a system, probably a network, to collect small fees for the high-volume usage of shareware modules. Here's where ISDN and object technology come in.

Let's say today's serious commercial applications each require 10 megabytes of disk. At a typical 2,400-bit-per-second transfer rate, it would take all day or night to receive an application by phone, either for trial or after registering on-line. Even at 14.4K per second and compressing 4-to-1, it would take about 25 minutes to download an application. That's still too long.

But using ISDN, you would be done in less than 4 minutes and shipping 'til you drop. Say goodbye to floppy discs, paper, and plastic wrappers.

Object technology would help shareware in an important way beyond making our PCs safer for strange software. With OT, large monolithic applications would no longer be the norm. Small software components, ideal for production by software entrepreneurs, could be delivered in much less than 10 megabytes, and therefore before ISDN. I see a whole new electronic marketplace for OT components to reverse current conditions in the PC software industry.

So, yes, the next big channel for PC software will be shareware — probably under some new name — and especially after we get ISDN and OT up and running. Isn't this a good idea?

Bob Metcalfe is publisher of *InfoWorld*. He founded *Electronic Arts* in 1973 and founded 3Com Corp. He received *Wired* as the Internet as Bob Metcalfe in 1973 or at 524-1127 on MCI Mail.

How to contact InfoWorld

Our gateway delivers MCI Mail to our local mailboxes. All of these addresses appear in MCI Mail's interactive directory. You may also send to one of these accounts through a gateway by concatenating the first initial with the last name of anyone on the editorial masthead. (For example, Rachel Parker is rparkar on MCI Mail.)

AppleLink: We have provided some of our editorial staff with personal accounts on AppleLink, including Stewart Alsop (AJSOP), Anne Kaliczak (KALICZAK), Lia Lorenzani (LIA.L), Tammie Helm (TAMMIE.HELM), Tracy McGehee (MCGEE.T), and Kristin Kuetter (KUETTER).

CompuServe: *InfoWorld* has a single account, which is collected at least once a day, for receiving letters to the editor and other messages.

CompuServe provides gateways to MCI Mail and Internet. To use gateways in combination with the addressing instructions below, use the following format at the Send to: prompt:

>MCI MAIL:address
>INTERNET:address@infoworld.com
For example, to reach Rachel Parker:
>MCI MAIL:address
>rachel.parker@infoworld.com

**Physical mail:**

InfoWorld is located at 155 Bowd Street, Suite 800, San Mateo, CA 94402.

INFO
WORLD

Publisher/CEO Bob Metcalfe
President/CEO Jon Casella
Senior VP/Editorial Director Stewart Alsop
Senior VP/Associate Publisher Michael Low
Senior VP/Circulation & Research Stan Vancor
Executive Assistant Patricia Kelly
Research Assistant Rosemary Nease
Tina Tempy
Ann Ryder

SALES & MARKETING

National Accounts Director Vicki Gorin
Director of Demographic Editions Steven Davis
Advertising Manager Joe Harris
Sales Administration Managers Ann Davis
Roseann LaBuro
Ada Dauph, Ron Hart
Renee Hicks, Steve Mofen
Karen Niles, David Pomeroy
Joanna Parker, Jim Shannon
Account Managers Mindy Christie, Susan Egan
Ken Thurgood, Sheila Hummel, Crystal Lewandowski
John Masi, Kelly Nandy, Luann Newman, Debbs Wright
Sales Support Coordinator Patricia Mishaw
District Sales Manager/W. Calif. Michael Hamilton
District Sales Manager/N. Calif. Thomas D'Amico
InfoMarket Advertising Director Diane Temple
InfoMarket Sales Staff Marc Calabrese, Sharon Chin
Joanne Feigen, Vi Kline
Dennis McSwiney, Lisa Waller

Ad Coordination Supervisor Chris Guo
Ad Coordinator Christine Corbett
InfoMarket Ad Coordination Manager John Craven
InfoMarket Advertising Coordinator Dennis Kent
InfoMarket Advertising Coordinator Dawn Keiser
InfoMarket Design Coordinator Gary Palmer
InfoMarket Administrative Assistant Gina Bertella

Director of Marketing Kevin Ellis
Creative Director Bob Schindler
Senior Copywriter Steven Young
Art Director Chris Johnson
Marketing Coordination Manager Jo Olson
Marketing Coordinator Casey Truman
Marketing Assistant Steve Stenantes

Director of Circulation Barbara Ruffner
Assistant Circulation Director Nancy Stirling Grant
Print Production Manager Debra Quisenberry
Circulation Manager Lucinda Formydrum
Distribution Manager Michael McNamee
Distribution Assistant Stephanie Beach

Director of Research Wally Palmer
Research Analyst Allison Baker
Research Analyst Monique Walters

OPERATIONS

Production Services Director Peter Holm
Production Manager Debra Gaulty
Print Production/Reprints Manager Ellen Moroff
Electronic Production Supervisor Judy Mainman
Art Director Mari Elia
Studio Manager Rachel Weisner
Production Project Coordinator Carol Bertoff

Director of Finance Carol So
Business Manager Bob Dumas
Financial Coordinators Jeanne Fitt, Grace Dumas
Billing Coordinator Bonnie Chin

Facilities Manager Steven Brown
Telecommunications Specialist Scott Tanner
Office Services Coordinator Janell Brown
Support Coordinator Oliver Lawrence
Receptionist/Activities Coordinator Linda Simon

Director of Information Systems Jeff DeBello
Publishing Systems Manager Mark Hertz
Software Specialist Jeff Etkin
Technical Support Specialist Susan Wang
Network Administrator Debbie Lewis
Support Coordinator David Smith
PC Support Specialist Robert Chang

HUMAN RESOURCES

VP of Human Resources Donna Verrillie
Human Resources Generalist Carrie Neumann
Training Coordinator Laura Durlister

THIS IS AN 855-FOOT, 70,000-TON NODE ON A NETWORK IN MIAMI.

Carnival Cruise Lines chose Remote LAN Node™ to connect their Miami-based LAN to their remote offices – ships at sea – for a simple reason: In their words, remote users “all get transparent access, just as though they were here at corporate.”

In fact, the comment we hear over and over again is, “It’s just like being there.” Because RLN™ lets you extend your network in such a transparent way that users have the freedom to work anywhere, without losing network functionality.

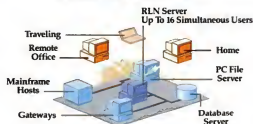
THIS IS A SIMPLE ILLUSTRATION OF HOW REMOTE LAN NODE WORKS.



RLN is a unique, economical software solution that *BYTE Magazine* said “comes closest to running an Ethernet cable directly from site to site.” (In a way, you can think of it as a software implementation of a network interface card.) And, as *BYTE* continued, it “eliminates the performance bottlenecks of remote-control packages and the protocol dependence of LAN-aware modems.”

That’s why companies like Carnival are using RLN to connect to remote clients across the world – or across the street.

THIS IS A SLIGHTLY MORE COMPLEX ONE.



RLN lets up to 16 remote PC users dial into your LAN at once and become actual nodes on your Ethernet network. Because RLN is built on industry-standard, MAC-level APIs, you can access any network protocol, such as IPX/SPX, TCP/IP, SPX/IPC, OSI and NetBEUI – or any interconnected combination. That means RLN is compatible with virtually any network operating system. So it not only gives



you freedom. It also gives you independence.

You only dedicate one CPU for 16 simultaneous users. So RLN is extremely cost-effective when compared to any other remote computing solution. It’s also surprisingly fast, using enhanced data compression for exceptional throughput. It’s completely transparent to the user, the network and the application. Since applications reside on the remote PC, RLN means running Windows™ remotely is a reality. And you can protect your network from unauthorized access with our optional Remote Security Adapter.

THIS IS A SIMPLE WAY TO TRY IT OUT.

LAN Times wrote, “Installing RLN on your LAN is one of the better ways to experience the future today.” And while we heartily agree, we’d like you to share the experience even before you install RLN on your own network.

Just call 1-800-348-3221, ext. 27 L,* and we’ll



if a node is on its way to one.

send you a free copy of the RLN client software. Then you can dial us up, connect with our LAN Lab server, and see for yourself.

As Carnival discovered, with RLN, no LAN is an island. Even

THE FREEDOM
TO COMMUNICATE.

*Call (404) 475-4380 if outside the U.S. © 1992 Digital Communications Associates, Inc. All rights reserved. DCA is a registered trademark of Digital Communications Associates, Inc. Remote LAN Node and RLN are trademarks of Intercomputer Communications Corp. Windows is a trademark of Microsoft Corporation. All other brand and product names are trademarks or registered trademarks of their respective owners.

ENTERPRISE COMPUTING



Setting corporate computing standards

IS managers assume a leadership role in the definition of core business requirements

BY PEGGY WALLACE

By establishing computer standards, corporations seek to provide their workers with answers — about applications, computers, and networks. Standards also help users and IS professionals understand the business goals their systems support.

To arrive at these goals, companies must first negotiate a path that is often strewn with crucial questions. Obviously, the first and biggest question concerns what to standardize on.

Bill Kirwin, vice president with the Gartner Group, in Stamford, Conn., believes that corporations should set standards at three levels. First is the architecture, which provides the foundation for standards to be designed and built upon.

The second, and quite critical level, is establishing interoperability. Corporations, Kirwin explains, must determine how data will be exchanged so that infor-

mation will be uniformly accessible. For example, a firm may decide that all spreadsheet files must use the WKS format. This doesn't limit employees to using only Lotus 1-2-3 but instead requires their spreadsheets to have the capability to import or export data in that format. By focusing on a standard file format, Kirwin says, you can have a high degree of compliance among employees without necessarily having to set "named product" standards, which is the third level in his scheme.

Price Waterhouse, a Big 6 accounting firm that employs hundreds of business advisory teams serving global customers, is one corporation that tackled the issue of standards much like Kirwin's model. To establish a "core technology platform," as national director of information and technology Sheldon Laube describes it, the company adopted a common network, as well as a PC-only computing environment, so that everything and every-

one could be connected easily in this infrastructure. Next came the selection of packages to run on the common Novell Inc. NetWare LAN, which included the adoption of Lotus Development Corp.'s Notes.

And while Price Waterhouse committed to buying 10,000 copies of Notes when first released based on Laube's championing of its capabilities, he, like Kirwin, believes that the format used to move the company's data back and forth between employees is far more important than an individual software package. Notes acts as a tool for Price Waterhouse to "create and manipulate knowledge," as Laube likes to describe it. Notes allows the company's nationwide divisions to share, through E-mail and databases, integral data such as legal opinions and tax regulations, which can then be used to counsel clients at a far more responsive pace than before.

But that isn't to say that establishing

standards is simply a matter of following a few formulaic steps. IS personnel must often strike a tricky balance on many points, such as developing strategic directions while also responding to user needs and encountering and handling resistance to standards.

Take the example of Syntex, a pharmaceutical company in Palo Alto, Calif. The firm has several IS groups that over time had developed separate strategies and standards. As Syntex became more networked, says senior technical specialist Steve Lassagne, it moved to adopt one companywide set of standards to increase efficiency and weed out duplication, a task made even more important in light of recent financial difficulties suffered by the company. While the movement to uniformity has gone over well within some of Syntex's divisions, others, such as the research division, have been more difficult to win over.

"These are very technical people with

technical jobs," Lassaragne explains about these specific users. "They have a lot of experience with microcomputers, so they tend to want to do their own thing."

"The trick is to set standards everybody can agree on, even though everyone wants to go their own way," says John Aach, a senior consultant in corporate information services at John Hancock Financial Services, a major insurance and financial services company based in Boston. Resistance to standards increases according to a firm's degree of technical literacy. "Where there's no installed base, you can move quicker," explains Christopher Teeter, associate partner for network solutions at Chicago's Andersen Consulting. In this case, you are training people to use a system or an application for the first time instead of showing them a different way to do things. And while Gartner Group's Kirwin says IS professionals usually benefit from the benefit of the doubt on the matter of architecture, much fractious debate still awaits them on the remaining decisions.

BE FLEXIBLE. "The fewer standards, the better, but it isn't our intention to select one and one only for two are needed to do the job," notes Ed Murphy, manager of the business systems division of the client services department at Boston Edison, a public utility serving 650,000 customers in the metropolitan Boston area. His company designated Harvard Graphics as the standard graphics software, but now they are migrating to PowerPoint because it allows for better integration with the many Microsoft packages already on the network. On the other hand, many employees were using Lotus Freelance, so they are evaluating that package as well. Such testing and rethinking is "an ongoing function of the division," Murphy states. "The standards are not cast in concrete."

TEST DRIVE. Testing is a constant at other companies as well. "Generally, [a product] will not be supported as a standard until we've looked at it, thought about it, and figured out that it covers all the necessary bases," Aach explains. Testing certainly went on while the Hancock standards committee was cooking up its list. "We were the worse thing you can do with a standard is make one that doesn't work," Aach notes. "We try and test appropriate to what the tool is." A stand-alone product such as a word processor will be given a run through to make sure it performs basic tasks, then it

Advantages of corporate computing standards

- Help employees understand business goals.
- Provide a common framework for IS support staff.
- Facilitate application and platform interoperability.
- Reduce user choices to a manageable product mix.
- Take advantage of volume sales discounts.

will be test driven some more by several people. A LAN product, on the other hand, will be used on "a real live LAN," although the product has been initially screened. "They agree to be guinea pigs," Aach says of the users on the tested LAN, who are willing to put up with any foul-ups because they are interested in the product and need it.

At Syntex, there is a network test lab — with a NetWare server, Digital Equipment Corp. VAX PCs, and Macintosh workstations — for evaluating network products as well as anything needing an isolated environment. No staff is associated with the lab; instead, it's available for use by all microcomputer staff. Potential applications are tested on it to gauge their impact on network traffic, among other things. For example, Syntex staff tested Microsoft's Windows on the network along with diagnostic software because there was controversy about distributing it on the network. And the test network is often subjected to antivirus packages — "something you'd hesitate to be testing on the real network by introducing viruses," Lassaragne notes.

STANDARDIZING SUPPORT. Syntex also has a task force working on help desk issues. Formerly, the company had a central desk for mainframe and telecommunications assistance, while each IS group maintained a separate desk for microcomputer help. "We're trying to coordinate that much more effectively now so people know who to call," Lassaragne says. Aach agrees that standardizing support saves time and frustration for users. "Before there were standards, it was always push and shove about support," he says. Now people can consult the book to find if the product they want to use is supported. All standard products are covered, as are some nonstandard products.

Giving users a certain amount of latitude circles back to Kirwin's model. By establishing standard architectures and interoperability, he says, companies can then market a "named product" standard. Users can choose among programs that accommodate the same data format, but the pot is sweetened for those using the standard product. Using Kirwin's spreadsheet example again, this means IS allows users to work with numerous spreadsheet packages but also publishes the fact that if Lotus 1-2-3 is chosen, you'll also receive support, training, and automatic updates, plus added value such as automatic connectivity to DB2 databases, 50 easy-to-use macros and templates customized for the computing environment, and help desk product support. Not only does this minimize re-

sistance now, it prevents it in the future should you decide to phase in something else in a few years, because the data interoperability has been maintained.

Chances are, Kirwin adds, you will be wanting to change a product standard every three to five years, when a software publisher releases a "whiz bang" program or a suite of office products. That's why it's crucial for companies to gather statistics on the benefits of establishing standards and bringing in new products. Plus there's often one last line of resistance — the financial side of house. Especially in the case where three years ago, somebody made a five-to-seven year decision," Andersen's Teeter reports. IS not only must justify something new in terms of its performance value but show that this value will cover the cost of what's already on the books.

Typically, it will cost a 2,000-user shop several million dollars to change from one standard product to another, Kirwin says, with the costs of training and file conversion factored in. Linda Musthaler, an industry analyst at Currid & Co., in Houston, agrees with this assessment. "File compatibility and conversions will be a big issue," she notes, "especially if it's something like word processing where people have a lot of files that need to get converted." As for training, which includes end-users and support staff, she says a good rule of thumb is to allocate six hours of training per person per course for each new product.

CONVERSION COSTS AND BENEFITS. Another point to keep in mind, Musthaler says, is the need for increased technical support. Generally, corporations can expect a 15 to 50 percent change in the

amount of calls to the help desk, with this range dependent on whether a new platform or software is being implemented.

There are also the costs of the evaluations and compatibility testing that are conducted before a company decides to make a change, as well as the costs of administrative tasks, such as training people up for retraining. And there's the matter of productivity.

"As people have to switch over from a favorite product to something new, they are going to lose some productivity as they get accustomed to the new product," Musthaler explains.

Still, many of these costs eventually turn into savings. Support staff saves time by only having to service a set group of products, and employees don't have to be retrained when transferred to a different department. Plus, "there's definitely some huge economies" on the enterprise level when it comes to purchasing standard software, Teeter says. A department of 50 to 100 employees isn't going to get any volume discounts, but a corporation with 1,000 users could negotiate a discount of 25 to 30 percent, he says.

Volume purchasing also lessens the headaches of licensing. Syntex, Lassaragne says, is currently talking to Microsoft and other vendors about implementing site licenses, something the company already does with antivirus and backup software, because he and his colleagues wanted such programs to be readily available to users. "We find that we get a lot more leverage when we buy a lot of a particular product.... The financial aspects are not lost on us."

Peggy Wallace is a San Francisco technology writer.

John Hancock writes the book on corporate computing standards

John Aach, a senior consultant at the Boston-based John Hancock Financial Services, decided to tackle the potentially volatile matter of standards by committee, which was made up of technology experts from across the company.

The group reached consensus by focusing on a few principles. First, it discussed how standards could let them reach the corporation's future technological goals.

"It was not about the here and now, it was about the up and coming," Aach reports, while it came for people to take a detached view of the process. And the committee aimed to keep in mind that its eventual standards were to aid users, which led to a decision to not make standards compulsory.

"There are a set of governing policies that let people work outside [the standards], they have a good enough case," Aach notes.

The end result of this year-long, "very massive effort," which also had to undergo a rigorous approval process, is a 112-page book of standards, updated monthly by the committee, that specifies technologies ranging from hardware platforms to software to telephones.

"It covers everything in information technology — it tells people what modern to buy," notes Aach, who acts as the chief standards administrator. The

project was done entirely in-house, he adds, with no vendor input allowed. Vendors can be given a walkthrough of the book's results, but they can't appeal to the committee to have their products included. Not even company officers can make changes — the subject is entirely the domain of the standards committee.

Now the various sectors of the company can refer to the book to decide what off-the-shelf applications to use or what officially sanctioned development tools and programming languages to use in building their own business applications. (Hancock's policy prohibits the publication of commercial product names.) The corporate IS department remains available to offer additional assistance.

Aach also points out that in some areas, the book includes a general standard followed by alternates. For example, the general workstation standard is a 486-class PC running the latest in operating system and application software, but there are eight alternates to this to cover the company's wide-ranging needs.

There are also alternate standards for networking connections and for operating systems. And, as noted already, if some users want to opt out of some of the standards, they are allowed to if they can justify the deviation.

"We're in business, and people have to do what they have to do," is Aach's user-oriented explanation.

[illegible]

the ce of NEC's



ENTERPRISE COMPUTING / MANAGEMENT

IS managers must keep customer data secure

Corporate IS caught in between helping marketers and avoiding breaches of privacy

By Doug Van Kirk

Can you keep a secret? As anyone who's ever received an annoying sales pitch over the phone can attest, a lot of information that used to be private isn't anymore. And companies like yours, knowingly or not, may be complicit in the spread of personal and corporate information.

The management of customer information is coming under increasing scrutiny as consumer groups and privacy rights activists push for new laws to protect individuals and organizations from the misuse of data.

As usual, those who manage computer-based information are caught in the middle, blamed for the technology that reduces privacy while at the same time sought for ways to make marketing and research efforts more effective.

Every company keeps databases of its current and potential customers. Increasingly, these customer lists are being sought by other firms. These databases contain, among other things, detailed financial information and buying habits. Some of the information is genuine, collected from the subject; other data is inferred based on statistical analysis.

The controversy hinges on several key issues: First, what information is appropriate to collect and how shall it be gathered? Second, what are the legitimate uses of that information? Finally, how is that data protected and who can access it?

While systems managers may not have a lot of control over their companies' uses of information, they're still responsible for it, especially if that information is misused or stolen.

Systems managers should be doing a lot more to protect the privacy of personal information stored on their computers, says Willis Ware, resident consultant to Rand Corp., in Santa Monica, Calif. Most companies, he adds, implement only the security necessary to ensure the protection and continuation of core business operations. Yet security is the framework for protecting privacy.

COMPUTER PRIVACY. Why should you care about privacy?

While there are few laws that regulate what companies can do with information they collect, consumers are very concerned about the kinds of information corporations keep about their finances and personal habits. Many small and medium-size businesses harbor the same fear: that inaccurate information or conclusions will hurt their ability to get credit or conduct business. According to Marc Rotenberg, director of the Washington office of Computer Professionals for Social Responsibility, a recent poll indicates that personal electronic data is as worried about privacy as are consumers.

Much of this information winds up on lists sold to companies that use direct mail or telemarketing to pitch their products. And it's not just consumers who get pestered; corporations are plagued by ad-



vertisements that appear on fax machines.

"I'm amazed how much hatred there is of junk mail," says Beth Givens, project director at the Privacy Rights Clearinghouse at the University of San Diego, an organization that provides information to consumers and businesses on telecommunications-related privacy issues. She explains that consumers are not so much disturbed by the mail itself but by the fact that so much information is available about them.

Givens cautions that there is a significant public relations risk associated with the misuse of personal information. Equifax Inc., the credit reporting service based in Atlanta, stopped sales of lists derived from its consumer credit files in 1991 after surveys the company commissioned showed consumers had a negative view of the practice.

Since that time the Federal Trade Commission has ruled that such secondary usage of credit information is illegal under federal law.

"Companies are starting to understand that privacy protection [can provide] a competitive advantage," says Bruce Koball, a privacy consultant and chair of the Computers, Freedom and Privacy conference held last week in Burlingame, Calif. If you can offer your customers some assurance that the information they provide is secured, it can give you an edge over competitors, he says.

There are also ethical issues that arise over the use of personal information. Who "owns" the information collected

about an individual or corporation? Is it fair to make money by selling information about people without their knowledge or consent? Should information collected under one pretense be used for another purpose?

"In general, there's a real paucity of [privacy] legislation at the federal level," Koball says.

With the exception of the credit reporting and medical industries, most businesses are free to collect as much information as they want about individuals, interpret that information freely, and resell it to other firms.

FEDERAL GUIDELINES.

While laws are few, there are some guidelines for handling information. Formulated in 1973 by the U.S. Department of Health, Education and Welfare's Advisory Committee on Automated Personal Data Systems, these recommendations don't carry the weight of law, but privacy experts generally agree that companies that adhere to them expose themselves to much less liability.

This "Code of Fair Information Practices" covers five key areas: It bans secret personal databases; prohibits secondary use of information without the subject's consent; ensures that individuals have ac-

cess to their records; provides a means to correct or amend records; and insists that accuracy must be maintained and unauthorized use prohibited.

"Organizations should live by some privacy principles," Rotenberg says. Few companies conduct thorough examinations of their information systems and monitor who has access to what, he says.

While the HEW guidelines have been endorsed by IBM and the Business

Roundtable (a national business policy group), few companies have publicly endorsed the recommendations, fearing that any breach might expose them to civil litigation.

Regardless of law, the trend seems to be toward more privacy, Rotenberg says. Both individuals and corporations seem to be more sensitized to privacy issues, and he expects new privacy legislation to be introduced under the new presidential administration.

This means that you may be asked to modify your organization's information systems to meet new privacy requirements.

HELP IS AVAILABLE.

More IS departments are taking an active role in protecting customer privacy. In fact, the Privacy Rights Clearinghouse plans to install an electronic bulletin board this year specifically to answer questions and give advice on privacy protection.

The Clearinghouse was recently contacted by a bank developing software to track down chronic check bouncers and by a consultant who wanted to build a system to filter lists of printing companies for direct marketing purposes. Both organizations, Givens says, were concerned that their systems would not violate consumer privacy laws.

Some organizations mistakenly assume that the lack of privacy laws governing corporate information means they don't have to be careful with personal data, but that is not the case. If you're responsible for maintaining corporate computing systems "you may find yourself liable...if someone breaks into your system or manipulates it in some way to violate an individual's or corporation's privacy," Koball cautions.

GOVERNING ACCESS RIGHTS.

The best way to safeguard personal data is to make sure that your systems are secure and that access is limited to trustworthy employees.

Ironically, many security clearance checks rely on the very information you may be trying to protect. As a systems manager, you should also make sure that systems can't be used to "redline" (discriminate against communities of minorities or low-income residents). If your customer lists contain any kind of medical history, that information should be kept confidential. Finally, you could be held criminally liable if personal data contains "access devices" such as passwords or credit card numbers that aren't related to your business.

At the very least, Givens says, every consumer record should have an "opt-out" field that identifies this individual as someone who does not want their name sold.

Finally, you may want to consider a privacy audit—a rigorous examination of the consumer information your company maintains. The audit should evaluate how the information is maintained, computer security practices, information access, and how the data is used.

Systems people should be doing a lot more to protect the privacy of personal information stored on their computers.

Willis Ware

cess to their records; provides a means to correct or amend records; and insists that accuracy must be maintained and unauthorized use prohibited.

"Organizations should live by some privacy principles," Rotenberg says. Few companies conduct thorough examinations of their information systems and monitor who has access to what, he says.

While the HEW guidelines have been endorsed by IBM and the Business

Case Study

IBM subsidiary moves beyond mainframe past

Austin facility goes outside the family to build on in-house expertise in OS/2 and Unix

BY ALICE LAPLANTE

Forced by tough economic times to downsize, a manufacturing plant in Texas slashes more than \$1 million from its operating budget by choosing a client/server system composed of Unix servers and OS/2 workstations.

Just another downsizing success story? Absolutely. But this time there's a twist. This is an IBM assembly facility. And even though proprietary IBM products could have done the job, the MIS director picked a competitor's software. In the process, he's cut costs, created new lines of business, and helped restructure his organization.

It seems even IBM doesn't want to be locked into IBM.

IBM's Austin-based Electronic Card Assembly and Test (ECAT) business unit is a \$1.3 billion operation responsible for manufacturing PS/2, PS/2 ValuePoint, and RS/6000 motherboards for IBM's Personal Computer Co. and personal systems division.

Since last summer, ECAT has been considered an independent subsidiary and must show a profit to its parent. But producing that profit was just about impossible in the traditional IS environment.

"We were expected to pay our fair share of IBM's internal IS expenses, which included mainframe time, desktop hardware and software, and network services," says Peter Stoll, ECAT's MIS manager. "We sat down and wrote up a business plan and looked at our costs, and it was clear that our technology expenses were way out of line," he explains. "We're a 2,000-person operation. We clearly shouldn't be paying the costs of supporting an MVS mainframe environment. We can't afford it."

So Stoll began searching for alternatives.

The first step was assessing the local technology resources and infrastructure. ECAT already had a solid LAN in place: 250 PCs and PS/2s running DOS linked to a token Ring LAN Manager network. Stoll thought this could form the client portion of a distributed enterprise-wide manufacturing resource planning (MRP) system. ECAT depends heavily on MRP systems to coordinate supplies and perform accounting for the thousands of components the factory uses.

Stoll needed to decide on server technology, and it didn't take long to decide that Unix was an attractive solution.

PLAYING TO YOUR STRENGTHS. Austin also happens to be home to IBM's advanced workstation division, where the RISC-based RS/6000 line of Unix workstations is designed and manufactured. The laboratory that developed AIX, IBM's version of the Unix operating system, is also in Austin. And IBM has a major OS/2 development facility in town as well.

"Given all these skills and talents that were right around the corner, it made sense to use them in our automation project," says Stoll. So the platform was decided: RS/6000s running AIX at the server and PCs running OS/2 at the client.

Then Stoll really started to challenge

the establishment, purchasing software from other vendors. In the past, Stoll would have been forced either to purchase an IBM solution, or build a custom-designed application in-house using IBM tools. "[But] those days are over," Stoll says. "For the first time, I was able to look at everything available on the market and decide what was best for our particular site."

After reviewing the half-dozen or so MRP applications that fit his chosen hardware and operating system configuration, Stoll decided on Avalon Software Inc.'s MRPII product for two reasons:

First, it used a SQL database (Sybase), which meant it would be flexible and compatible with a wide range of tools. Second, Avalon programmers used a very structured development methodology that involved strict quality control procedures and the use of computer-aided software engineering (CASE) tools.

"This was important because we're going to have to make significant modifications over the next few years, and we have a limited internal programming staff," Stoll says. "Avalon's use of standard CASE tools means that we'll be able to customize the software ourselves quickly and easily."

Estimated savings? More than \$1 million over the next three years, according to Sheryl Corinista-Ottoson, a senior financial strategist at Computer Economics Inc., the consulting firm in Carlsbad, Calif., that did a cost analysis of the project. And that figure doesn't take into account the fact that the new software allows the IBM plant to move ahead in a new competitive area: making OEM designed and labeled motherboards for other computer vendors in the Austin factory.

"This new source of revenue simply

wouldn't be possible using our old system," Stoll says.

Was Stoll challenged on his choice of non-IBM products?

"I was asked to explain my decision, but I wasn't under any pressure to change my mind," Stoll says. The only comparably priced IBM solution was AS/400 technology, and "we had absolutely no AS/400 skills on site."

NEW BUSINESS, NEW TOOLS. Lower costs and new business weren't the only benefits. Stoll says the most challenging — and exciting — part of the project was helping redesign ECAT's business. As ECAT changes from a captive organization to a competitive company, many of the old ways of doing business are falling by the wayside.

Order entry and configuration functions in the software are particularly sensitive to this change of direction, Stoll says.

"I'm constantly meeting with our business folks, with manufacturing workers, and everyone else in between in order to make sure we have everything covered," Stoll says. He is also hoping that ongoing negotiations with Avalon will help: Cur-

rently, the Avalon software has no provision for factories that make OEM products in addition to those sold under their own labels. He's attending an Avalon user meeting next month where he hopes to muster enough support from other Avalon customers to influence the vendor to include support for OEM operations in its next code release.

At the same time, Stoll is currently focused on putting an adequate support structure in place. He's decided to hire IBM's internal IS group — which is now, like ECAD, an independent business unit — to handle support and network services. This is where his initial platform decision paid off: He's enlisting the help of local RS/6000, AIX, and OS/2 experts to help bring local Integrated Systems Solutions Corp. (ISSC) staff up to speed. And IBM's ISSC is scrambling to make sure it won't lose his business.

"Instead of being compelled to use ISSC, we're now [choosing] to because they are providing us with a very cost-effective service contract and are showing their eagerness to accommodate our new platform," Stoll says. "They've suddenly become very customer oriented. It's a completely new relationship. They know if they don't give us what we need, we won't hesitate to go elsewhere."

FREEDOM . . . COMPETITION. Stoll sees an important lesson in IBM's reorganization.

"Being free to shop around for the best technology rather than being tied to the traditional IS way of doing things can save your company a significant amount of money without losing a bit of functionality," he says. This isn't just a lesson for IBM, he stresses. "Always question, always compare."

Even Big Blue is coming to realize that freedom of choice can have a liberating effect on cost and profits.



Peter Stoll of IBM's Electronic Card Assembly and Test unit looked beyond the corporate walls to find a client/server system that brought his computing costs down and enabled a new line of business.

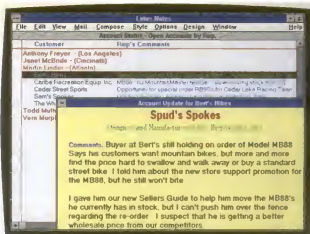
BILL ALLERTON / GAMMA LIAISON

Rules of the new world order:

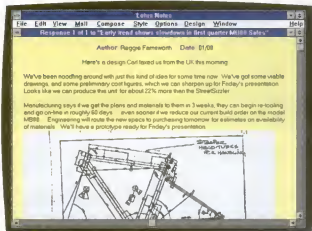
- Convince senior management that tradition isn't the best reason to stay with your vendor. Shop around. Compare costs and functionality.
- When choosing new hardware and software platforms, take an inventory of existing technology skills in your geographic area. It can be difficult to implement and support a technology if no one has used it locally.
- If you need to customize off-the-shelf software, try to convince your vendor that other users can benefit from these changes, too. That way, modifications can be incorporated in future releases.
- Ask if your software vendor has used a software development methodology or CASE tool that will make modifications by your internal staff easy to implement.



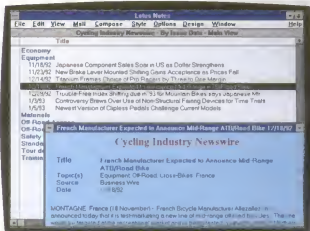
1. This is Michelle's Notes desktop. Each icon represents a different Notes application. She uses these to work with people all over the world including the field sales team, manufacturing, engineering, R&D, key customers and senior management. She regularly scans activities in the field by double clicking on ACCOUNT STATUS.



2. Today, she notices a number of entries regarding a slow-down in closing first quarter reorders for their most popular model, the Mountain Master off road bike. It seems the market for this high-priced bike is beginning to dry up. This could be a major problem.



5. The next morning she checks into the DISCUSSION database and this time finds an entry from Reggie in R&D. Reggie had also read Jim's message and is responding with a possible solution his people have been playing with. He pastes in an autoclaid illustration faxed to him from the U.K. using a Notes incoming fax gateway.



6. With a presentation on Friday, Michelle gets down to some quick market research by opening up the CYCLING INDUSTRY NEWS database. An organized source of the industry data, it provides a news report on a French company that has a couple months head start developing a hybrid bike.

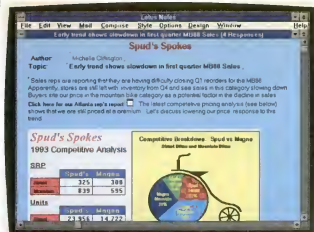
To see how fast you Lotus Notes, just water

What would you do if you suddenly found out that your key product was in trouble? Could your organization react quickly and effectively?

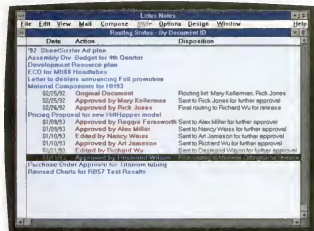
We've chosen this as an ideal situation to demonstrate the power of Lotus Notes®. See how Notes improves business performance by accelerating processes and helping people work together more effectively.



Michelle Cliffting is a product manager for a bicycle manufacturer. She's responsible for all product planning, market research and marketing activities for her production line. Notes helps her shift gears and rush a new product to market. See how she accesses, tracks, shares and organizes information in ways never before possible. How



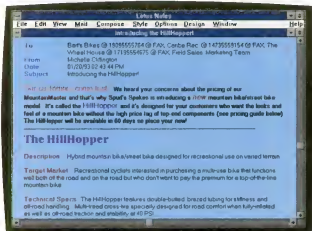
3. She decides to recommend a price-reduction and double-clicks into the STRATEGIC PRODUCT DISCUSSION database. This provides an organization-wide forum to discuss issues and brainstorm solutions. She links the report from the Atlanta rep directly into her Notes document. Then she uses DDE to embed some 1-8-3 charts into her document as well.



7. A few days after routing her proposal to the product team, she wants to find out where it stands within the organization. She opens the ROUTING STATUS application to find that it has worked its way through the organization to Desmond, the senior decision-maker, and has been finally approved. So she's on her way.



4. Later in the day she re-enters the DISCUSSION database looking for responses. Her boss, John, has logged on from his hotel room in San Francisco. Rather than cut the margin, he suggests she explore the feasibility of adding a mid-priced bike to their line. He wants an initial presentation for Friday.



8. Michelle closes the loop by communicating the news to their customers. Double-clicking into the CUSTOMER FEEDBACK database, she faxes a memo directly from Notes to all retailers. In it she explains that the company has heard their problems and responded with the Hill Hopper. And with delivery in 60 days, they can order now.

can respond with a michelle shift gears.

effortlessly people use Notes to respond and move the project forward.

You'll see why organizations that have Notes build their operations around it. And why they've seen as much as a 400% return on investment.

You don't have to be a large company to afford or appreciate Notes. A Notes Group Pack™ will have ten people working as a team for under \$495 per user. It includes 10 of our most popular Notes applications

including SALES MANAGEMENT, CALL DISPATCH and GROUP DISCUSSION, as well as complete installation and usage documents. For information call 1-800-872-3387, ext. 8619, or your local Notes VAR.

Lotus Notes

Down to the Wire / Nick Petreley, Nancy Durlister, Laura Wonnacott

When it comes to Unix, let the buyer beware: It's not for the meek

Last week, as you may recall, we told you how we were in the process of configuring our new Sun Microsystems Sparc 10 workstation. This week we continue our quest by installing a CD ROM drive on our machine. Our ultimate goal is to install a SQL database on the Sun Sparcstation. We actually plan to install the database on other platforms as well — namely IBM OS/2 and Novell NetWare. We're trying to determine the best platform for running a database engine.

No platform test is complete without Unix, or Solaris on our particular case. Unix is a challenge for DOS-centric folks like us, although we're not entirely unfamiliar with the territory. Two of us have just learned Unix, and the third hasn't had quite enough time to forget it. In other words, none of us is a guru. We actually use our manuals, and we find ourselves experimenting a lot.

MANUAL? WHAT MANUAL? Because Unix is such a "standard" operating system, Sun assumes that you won't need a manual — at least not one you can hold in your hand. Sun provides an on-line manual, with details about the commands you already know about. Then there's always the bookstore for learning those you don't know about. Naturally, the book from the bookstore describes a Unix that is not quite as standard as the one on your machine, so tinkering is always required.

To make the Unix discovery experience even more challenging, the backspace key on most Unix vendors' machines will produce weird control codes on the command line. Until you learn to reassign the backspace key to do what it's supposed to, or until you change your typing habits, the Unix gurus in your shop will stand behind you and smirk as



you fumble your way through even the simplest operations.

SPILL THEIR FUN. Type the command "any erase ^H" to set the backspace key to do a backspace, and put said command in your .login file (it's sort of an AUTOEXEC.BAT file) for continued backspacing pleasure. Oh, and watch it: Unlike DOS, Unix commands are case sensitive.

TRAVELING INCOGNITO. We didn't mean to whine about the lack of written manuals. It's not that we didn't get enough to read, it's just that Sun is committed to the paperless office. The bulk of our documentation came on CD ROM. Unfortunately, we couldn't get the Sun to read our CD ROM drive.

Each time we booted the Sparcstation, we got a suspicious error message: "Unrecognized vendor Toshiba product CD-ROM XM-3301/TA." In spite of the fact that the message appeared to be something of an oxymoron (it seemed to know an awful lot about a product it couldn't recognize), we assumed the problem was with the configuration. We checked everything in the written docu-

mentation about configuring the CD ROM drive, and neither sentence said anything useful. There may have been configuration instructions in the CD ROM documentation but, well, you can see where this is going.

We checked the insert that came with the CD ROM drive. It said the drive wasn't certified to run with a Sparc 10. We called Sun tech support. They said it wasn't certified to run with a Sparc 10. Evidently, they read the same inserts we do. We called our reseller, who said it worked fine with the Sparc 10 and offered to come out and prove it.

The reseller was right: It only took a minute to find the problem. It turns out they forgot to cut two traces on the CD ROM drive's printed circuit board. (Now we didn't think of that?) There was nothing wrong with the drive's design. It works fine if you connect it to a PC. Sun users, however, will need an X-Acto knife and mystical foreknowledge or a less absent-minded reseller to get it working.

At long last, we were almost finished setting up the Sparc.

IT TAKES ONE TO KNOW ONE. At the heart of the operating system is the Unix kernel. The software that you, the user, actually interact with is the Unix shell at the command line or the graphical user interface (GUI). In other words, Unix is designed something like a nut.

The Sun Sparc 10 comes configured with a minimal kernel — an operating system with the minimum features necessary to run. If you want the full-blown Unix, as we did, you have to replace the default kernel with the extended kernel. That's what we did.

You do that by editing or replacing the kernel file. If you choose to edit the file, you will probably use the arcane vi

editor. This editor, which is typical of Unix, features "intuitive" commands such as Escape-Shift-Z-Z to save and exit.

Before you implement your changes, you usually make a backup copy of the old kernel. Then, you run the make program, which looks at the make file for instructions on how to recompile the Unix source code and relink the object files with the appropriate libraries in order to build a new, larger executable file. You replace the old kernel file with the new executable, and reboot. Simple, right?

Actually, if you have any idea at all of what we're talking about, it's probably because you're a programmer, most likely a C programmer. The rest of you have probably abandoned us by now and are flipping the back of the newspaper to reread Crigley.

Which brings us to the point. While we think our upcoming database tests will show that Unix machines like the Sparcstation will be the best platform for a database server, Unix exacts a hefty toll. Don't let anyone tell you that Solaris, Open Look, or any other GUI shell is going to insulate you from what you'll need to know to get a Unix system up and running and properly tuned for your particular applications. The underlying nature of Unix makes it difficult to cover up the complexity with a GUI. The closest thing to a successful coverup we've seen so far is the Netscape workstation.

By the way, the Sparc still tells us it doesn't recognize a "Vendor Toshiba CD-ROM XM-etc., etc." drive, but as no one seems to have told it not to talk to strangers, we can access the CD ROM just fine anyway.

Down To The Wire chronicles the ongoing adventures of our InfoWorld IS test force, the Enterprise Team.

Help Desk / Brett Glass

DOS disk utilities can be fooled into skipping a drive letter



The LAN I manage has PCs both with and without fixed disks. All have floppy drives A and B. My problem is this: I must install a RAM disk on each PC to store FoxPro II temporary files. The machines share a common FoxPro configuration file. Because RAM-DRIVE.SYS uses the next available drive letter, some RAM drives end up with the letter C while others become D. Is there a way to force the RAM drive on each machine to use the letter D?

Gregory Martindale

This is one of my pet peeves: DOS and many of its utilities don't allow you to assign specific drive letters to devices. When you use a program such as RAM-DRIVE, it always uses the next free drive letter. This means that when you reconfigure your system (by adding a hard drive, a CD-ROM, or a diskette drive to utility, for example), you may have to make extensive changes to batch files, configuration files, INI files, and Windows Program Manager groups. And on a LAN, it's tough to standardize drive let-

ter assignments.

There's no universal answer to this problem, but there's an easy workaround for your situation. Use DOS' DRIVER.SYS program, which assigns alternate drive letters to floppy drives, to consume a drive letter on the machines that do not have a hard disk. Place the command

DEVICE=C:\DOS\DRIVER.SYS /D:07:40/S /M2:F0

in your CONFIG.SYS file before the line that loads the RAM disk utility. Drive letter C will become an alias for A, and when RAM-DRIVE.SYS loads, it will use drive letter D.

We are trying to use SCSI for fast bidirectional communications, but we cannot find an adapter that supports SCSI's target mode. Why is this? Is there an adapter that does support target mode?

Benny Jones

While every PC SCSI card can be the "initiator" of a transaction on the SCSI bus, very few are able to act as a "target" — a device that receives requests from

other devices. This is unfortunate, because allowing a computer to receive a SCSI transaction opens up a whole world of new communications capabilities.

So far, I've found only one SCSI adapter whose documentation clearly describes how to program it as a target: Adaptec's 1540. Be sure to order the technical reference manual, which describes the "mailbox" protocol your software must use to communicate with the adapter.

Bruce Lounsbery

Our LAN server has two ARCNET network interface cards: an SMC 3200 (EISA) and an SMC PC00FS (ISA). We have benchmarked the two cards and have found that the EISA board offers no increase in speed over the ISA card. Why?

Moving to a faster or wider system bus will speed up performance only if the bus is the bottleneck. While ARCNET is extremely robust and fault tolerant, it runs so slowly (only 1.82 megabits per second after overhead) that the LAN, not the computer's bus, is the limiting factor. An EISA or VL Bus LAN adap-

ter will surely help if you're running a fast network such as FDDI. It might also speed up communications between a host and an intelligent Token Ring or Ethernet controller. But with standard ARCNET, you'll get the same performance from a cheap, "dumb" card.

If you have a fax/modem board in your PC, is it possible for someone to send you a file or fax that contains a virus?

Howard Sternlieb

If the message is a fax image, it might be ugly, but there's no way it can infect your computer with a virus. If you use fax/modem and receives data files (Intel's Satisfaxion and Connection Coprocessor can), you can get an infected program that way. However, the risk is no greater than with an ordinary data modem, and to be infected you'd have to run the received program without scanning for viruses.

Brett Glass' Help Desk is for answering business computing questions. Readers can leave questions by calling (800) 227-8365, Ext. 702, or by messaging ComputerServe (72627.3673).

Civilized Computing / Cheryl Currid

Test yourself for the seven traits of 'change agent syndrome'



Have you checked for the warning signals lately? Are you exhibiting strange corporate behavior? You could be showing one of the seven traits of a corporate change agent.

No, you won't see a rash or spots starting to develop. In fact, chances are you won't see anything at all. With "change agent syndrome" you'll feel more than you see. You'll begin to feel that you can or should start making changes—and so you do, all over the company.

More and more, IS professionals are beginning to take on the challenge and career of making computing within their corporations more effective. (Frankly, I love it!) They are mobilizing and moving quickly to infiltrate their company corridors with new technology and programs aimed at making everyone more productive.

In some severe cases, these IS heroes are starting to risk career and credibility to break old paradigms about how business should or shouldn't compute.

How about you? Are you starting to develop the syndrome? What are the clues? Here are the telltale signs:

1. Business book buying. You find yourself spending more and more time with your nose in heretic management books. You've expanded your reading beyond books on technology to works such as Tom Peter's *Liberation Management* or Alvin Toffler's *PowerShift*.

With each reading, you begin to piece things together. You'll start to see how information technology can and should play a role in making your company more effective. You feel compelled to try something.

2. Adopting an attitude. You've adopted a can-do-will-do attitude about pushing projects through the organization. When you know you are right, you are willing to carry the torch and a banner. I

funding for a fiber backbone around the company's manufacturing plant campus. Instead, they found individual departmental managers with funds that let them build out one segment at a time. Within six months they had the entire network up and running.

4. Seek and search modes. You've found yourself in constant search mode for new technology that will help out fellow corporate citizens—even if they

moving into modes as leaders and visionaries, and letting teams self-manage the day-to-day activities involved in getting the job done.

6. Administrative avoidance. You have had all with paper. You started skipping on status reports, have postponed performance appraisals, and have done away with daily detail logs of activity.

Instead of spending 20 to 30 percent of your time pushing paper from one side of your desk to the other, you've decided to do more meaningful work. That brings us to...

7. Wondering and wandering. You are spending more time out of your chair than in it. You find yourself wandering through the halls, looking at what end-users are doing with computers on their desktops. You are intrigued by any and every new use and encourage end-users to tell you more about what they are doing. Ultimately, you figure out that users and IS people should work together toward finding optimum computing solutions.

Well, if you find yourself exhibiting any of the seven warning signals, let me know. What are you doing that disrupts the status quo in your company? And what changes have you made? From my perspective, you are on the right track.

Cheryl Currid, president of Houston-based Currid & Co., focuses on helping clients assess, apply, and organize for new information technology. Her *Compuserve* address is: 75300.2660.

IS heroes are starting to risk career and credibility to break old paradigms about how businesses should or shouldn't compute. Are you starting to develop the syndrome?

know some IS managers who have even said things like, "Either let me try this project, or fire me and put me out of my misery."

3. Selective hearing. You don't take no for an answer. Somehow, you've developed selective hearing when it comes to a project you absolutely know will work. If management turns down your latest proposal for network expansion, or even trying that new workflow software, you figure out a way to make it happen anyway.

For example, I know one group of LAN administrators that was denied

didn't ask for it.

5. Cheerleading for change. You sometimes feel more like a cheerleader (without pompons) than a manager. You have adopted a rah-rah spirit rather than dictate orders to your staff or the company end-users.

It turns out that many IS managers are finding themselves out of classic command and control roles. Instead, they are

The Network Curmudgeon / David Strom

Network CD-ROMs still need some tweaking to be useful



Last week I wrote about why CD-ROMs on networks make sense. Now let's talk about why most of us probably won't get that far and will stick with CDs on individual workstations.

My own experience getting a CD installed on a Windows PC, Macintosh, and networked device called the Infoserfer from Digital Equipment Corp. wasn't pretty. We still have a long way to go, especially on the DOS/Windows side.

For my Windows PC, I settled on a Dell 486 and bought the Creative Labs Sound Blaster upgrade kit, which includes a CD ROM drive, a 16-bit ISA adapter, cables, and several sample CDs—including Windows 3.1. I thought I'd finally found one box that had everything I needed (except speakers!) until I found out that this was the "old" style, "slower" CD. More on that later.

I got my Mac IIxv with a built-in CD drive on loan from Apple, mainly because finding one with the CD drive option and in stock at the store was impossible when I went shopping in early December.

The networked CD is the DEC Infoserfer, which comes with a CD drive that can read a variety of CD formats, provided you install the appropriate client-side software drivers. The box runs over an Ethernet network and includes drivers for Mac, the Windows and DOS clients

(called MSCDEX), and DEC-formatted CDs to attach to it. You can also get a Sun client driver now. To my knowledge, this is the only product that runs this many formats.

Setting up the Infoserfer took the longest, mainly because it had the most functionality and I had to install the most software in order to actually use it at the client workstations. It uses its own protocol, which is specifically designed to

come my own system integrator when I tried to install my Sound Blaster kit. The kit contains just about everything you'll need to make your PC CD ready, with three exceptions: First, the piece of software that tells you which interrupts you are using only says they are otherwise engaged, not what hardware is to take the blame. I had to fumble around for a few hours until I figured out that my Intel fax board was using Interrupt 10, which was

though the Mac controls are easier to use, and only some of the PC drives (not the Sound Blaster, much to my dismay) can play them. Figuring out what kind of Windows-style CD player will play these Photo CDs is a real chore.

Actually, the Mac CD can also read Microsoft's MSCDEX CD format. The trouble is that it can't run any of the software on them, it can just look at the files.

But the Mac's real win is its network access to this CD information. If I enable file sharing through System 7, other Mac users on my network can view the information on that CD without having to worry about running a new protocol. To do this on a PC, I would need yet another piece of system software (take your pick: a peer-to-peer LAN, Windows for Workgroups, some LAN CD extensions, or Microsoft's LAN Manager) and more integration time to make it all work. It isn't very clean.

So this is the state of the CD: DEC is onto something with its Infoserfer. Macs make great CD workstations, and even can share them over the network. Windows and DOS are still the great unwashed.

As I said last week, the opportunity is there. But until we fix all this plumbing, we won't see many networked CDs.

David Strom is president of his own consulting firm, in Port Washington, N.Y. He can be reached via MCI Mail at dstrom@212666 or via the Internet at dstrom@radiomail.net.

DEC is onto something with its Infoserfer. Macs make great CD workstations. Windows and DOS are still the great unwashed.

move blocks of data from client through the network and to the server.

Setting up the Mac client (both the one provided by the Infoserfer and the one that comes with the Mac IIxv) took the least amount of time, mainly because of the way System 7 is designed.

The Mac's real advantage is seen in its system software. CD support is accomplished through "extensions," which are pieces of software that get copied into one's system folder. And, if you don't know where to copy them, the system software will put them in the right place. That's nice. Try doing that to some INI file on a Windows PC.

Speaking of the PC side, I had to be-

where I wanted to install the sound board.

Second, I needed to obtain from Dell new drive rails so my internal CD ROM would fit snugly inside the drive bay and not rattle whenever I put a CD in it.

And finally, I needed to get speakers: No sense having this nice sound system if I am going to listen to it on that 19-cent speaker inside the PC.

On the Mac side, the internal speaker is quite adequate, and every model sold since the IIsi comes with ports for the speakers and microphones on the back.

Speaking of which, both the Mac and PC can play regular music CDs and display the new Kodak Photo CDs, al-

It's not surprising WordPerfect Microsoft Word for Windows



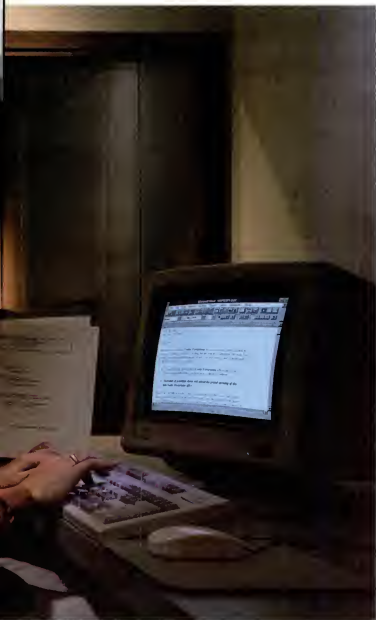
At last count, more than half a million WordPerfect® for DOS users have moved to the number one word processing software for Windows™: Microsoft® Word version 2.0

for Windows. And there are plenty of good reasons why.

First of all, WordPerfect for DOS users actually helped us to make Word for Windows easier to use.

During the development of Word for Windows, we invited WordPerfect

Perfect users are switching to Windows. They helped define it.



users to try it out on the things they do every day at work. We call these types of sessions "usability studies." They help us find out the way in which people use their computers, and how we can make it easier for them.

In this case, we were able to de-

sign features that can make not only your everyday work easier, but also the transition from WordPerfect.

Like the customizable Toolbar. It gives you one-step access to inserting bullets and printing envelopes. Word for Windows can also take all your famil-

From November 1989 to August 1992, over half a million WordPerfect users have switched to Microsoft Word for Windows.



iar commands in WordPerfect, and then display the equivalent commands. So you can learn while you're working on your everyday tasks.

We even had the National Software Testing Labs put Word for Windows to the test in ten cities across the country. The result was that nearly 8 out of 10 WordPerfect users preferred Microsoft Word for Windows for ease-of-use over WordPerfect for Windows.

But they're not the only ones who prefer Word for Windows. Recently, it received numerous industry awards, including "Best Buy" by *PC World*, and "Editors' Choice" by *PC Magazine*.

To find out how easy it is to make the switch to Word for Windows, just give us a call at (800) 426-9400, Dept. HY9. And then spread the Word.

Microsoft
Making it easier

REVIEWS / PRODUCT COMPARISON

Remote control software

Now you can be in two places at the same time



TEXT BY **TOM HENDERSON** REVIEW BOARD

TEST PLAN DEVELOPED BY **TOM HENDERSON** AND **VICTOR R. GARZA** TEST DEVELOPMENT SPECIALIST

BENCHMARK TESTING BY **JEFF SYMOENS**, **ANDRE KVTITKA**, AND **ROD CHAPIN** TEST ANALYSTS

EDITED BY **ANN M. MARCUS** ASSOCIATE REVIEWS EDITOR

The "ghost" is actually a PC user dialing in from the road, home, a hotel room, another office, or anywhere else PCs go. The goal of the haunt is to gain more than just bulletin board or terminal service from the host PC.

MAKING THE TWIN IDENTICAL. Ideally, a remotely controlled PC looks, feels, and operates just as though the operator were sitting at the host keyboard in the office. All of the resources of the host PC should be available to the remote, or viewer, PC. The remote can load all favored software, print hither or yon, send and receive mail, even attach to the local mainframe.

The roles played out between a remote PC and a host system vary widely, and that makes categorizing remote control software difficult.

This product comparison covers both the modem and LAN versions of four remote control software packages that control PCs under DOS (including various graphics modes) and Windows. They are Norton-Lambert Corp.'s Close-Up (modem version 4.01, LAN version 2.5); Triton Technologies Inc.'s CoSession (modem and LAN versions 6.1); Symantec Corp.'s Norton pcAny-where (modem and LAN versions 1V);

and Ocean Isle Software's ReachOut (modem and LAN versions 3.2).

ROLE MODELS. The three factors that identify and distinguish remote control packages are graphics control, network connectivity, and security and control features.

Several packages, such as Avalan Technology Inc.'s Remotely Possible and Microcom Inc.'s Carbon Copy (for DOS and Windows) would be shoos-ins for inclusion in this category, but their newest versions will not ship in time for this comparison. We will cover these products in stand-alone reviews as soon as they are available.

Several packages came close to being included in the comparison but did not quite fit the bill.

For example, Blast, from U.S. Robotics Inc., performs outstanding terminal emulation but can use only text and certain ANSI modes to control another PC. Control of Windows is not in its repertoire.

Cross Communications Co.'s CrossConnect also works in a nominal way to control another PC but isn't compatible with any graphics modes. Instead, CrossConnect allows a PC to share up to 20 modems on a network — both dial-in

and dial-out. CrossConnect shares modems well, but its supplied remote control software doesn't have enough horsepower to make it competitive in this category.

HOW DO THEY CONNECT? The simplest method of remote control involves connecting one PC to another via modems and phone lines. Another variation is connection by LAN — no modems — with the data transported via network wires.

Connection via LAN is a favorite of help desk and technical hardware and software support personnel: A support person is able to control another user's PC from any network-connected PC.

A more sophisticated capability of remote control software is dialing into systems through a modem pool. Modem pools usually consist of several modems shared through a single PC or a network-attached modem that serves as a dial-in gateway to hosts located on a network. When a remote PC dials and connects to a modem pool, a menu or list of available controllable host PCs is presented.

There are two competing standards for modem pool communications: NACS/NASI (advanced by Novell Inc.

Tonight, PCs around the world will suddenly leap to life as though possessed. Characters will magically appear across their faces, hard disks will chatter, printers will whirl, spit, and cough paper. Then, perhaps, a telephone dial tone will spontaneously peel out in the otherwise uninhabited office — followed by arpeggios of Touch-Tone numbers dialed at impossible speeds, high-pitched beeps, and blasts of static.

The PC comes magically to life, as though there's a "ghost in the machine" (recalling an album by the Police and a book by Arthur Koestler).

and others) and "Interrupt 14" (advanced by IBM and others). Each standard has variations, and neither has IEEE, CCITT, or ANSI sanction.

A variation on the theme of network pools is the access server—a frame filled with single-board PCs (in effect, multiple boxes in a box) connected to modems (1WI, Cubix, and the like) that allow for a higher volume of dial-in activity.

However, the target of most remote-to-host activities via modem pools or direct connections is the networked desktop machines of employees who are dialing in from the road or from their homes.

All four packages here have separate modem and LAN connection versions that remotely control a host PC. The modem connection serves as the remote worker's LAN connection. This setup gives you the option to share PCs dial into a machine on the network in order to provide its user with technical support from your PC.

MAKING IT SNAPPY. The speed of data transmission can be important in the modem versions of remote control packages to keep costs down and provide seamless operation. Except for no-charge calls, remote access involves line usage charges combined (probably) with long distance charges.

A fast modem-based remote control package offers quickly established sessions, rapid screen updates, fast file transfers, background operation, and seamless operation. A remote session should look and feel as though one were sitting at the host PC.

Speed is not just important with the network versions. Of course, the network versions of remote control packages we tested performed faster than their modem counterparts. That's because the networks connecting them offered faster access than the modems could. Heavy network traffic can, however, cause LAN remote control software to show some hesitancy.

KNITTING A SECURITY BLANKET. System security is a strong concern for everyone from networkers to information systems professionals. Security breaches can be enormously expensive, and an active electronic countermeasure raises concern with any computer-telephone connection.

Some companies that use remote communication insist that modems attached to PCs on their (inter)network must always dial back to the remote unit. This kind of policy covers possible security problems in three ways: Access is granted to predetermined, host-called telephone numbers connected to remote PCs; the telephone carrier is chosen by the host company; and a long-distance record can be made for auditing purposes.

Although dial-back always increases the overall transaction time for users, it affords some safety against electronic petty theft.

Thomas B. Henderson is the president of *Thoratec Networks Inc.*, a network design and integration firm, and president of its subsidiary, *Beach Labs Inc.*, a product evaluation facility in Indianapolis. His firm has designed and/or installed more than 500 networks in the Midwest. He has written several books on microcomputer topics and is a cofounder of the LAN Dealers Association.

How we tested remote control software

We tested four remote control packages to see how well they performed four tasks: a modem-to-modem connection, a modem connection via a modem pool, a control session of one LAN node by another, and a terminal emulation task.

We installed the four products on a 33-MHz 386-based workstation connected to a Novell NetWare LAN. Our host workstation was a 33-MHz 386DX running Microsoft DOS 5.0 and QEMM 6.03X. It had 8 megabytes of dynamic RAM, a 205-megabyte Maxtor SCSI drive, an Adaptec 1542B SCSI controller, NetWare Open Data Link Interface (ODI) drivers, Thomas Conrad 4045B Ethernet network interface cards, Novell LAN Work-Place for DOS 4.1, TCP/IP protocol stack, and a Trident 1024K Super VGA card. We used a Zoom Telephonics 14.4-kilobit-per-second V.32/V.42bis (MNP 5) external modem.

The remote workstation was a 33-MHz 386DX running DOS 5.0 and QEMM 6.03X. The system had 8 megabytes of dynamic RAM, a 105-megabyte Plus Hard Card, and a Trident 1024K Super VGA card, and a Zoom Telephonics 14.4-kilobit-per-second V.32/V.42bis (MNP 5) external modem.

For our network, we used NetWare 3.11C i0Base-T running IPX/SPX, TCP/IP 192.168.1.000, ARP/RARP, SNMP, MicroTest LANModem, Novell (hardware) LANalyzer, and NG Expert Sniffer.

PERFORMANCE:

Installation and configuration: We awarded a score of satisfactory to products that we could easily and successfully install and configure. We gave extra points for a particularly intuitive interface or especially intelligent default choices.

MODEM-TO-MODEM:

The first task examined the networked PC-to-PC host/remote rela-



tionship. We installed host software on one stand-alone PC and remote software (in most cases, these are the same) on another stand-alone PC. We established a connection using two U.S. Robotics Courier V.32bis modems over a standard (local) telephone line. We loaded the software on both the host and remote PCs. The remote PC logged in to the host (using a password); the host, still in host mode, disconnected and then dialed the remote back and made another connection. We initiated a batch file on the remote that launched a suite of applications on the host. We noted application response and mouse and cursor movement and then terminated the applications.

We awarded a satisfactory score to products that offered detailed customizing options, were capable of connecting and initiating without losing place, and correctly prompted for passwords. We awarded extra points for smooth screen updates and mouse and cursor movement, software that could load into high memory, small TSR displacement, files smaller than 500K, a scripting language, and the capacity to use a wide variety of monitor-to-monitor relationships.

MODEM-TO-MODEM POOL:

This task tested the remote software's network connectivity via a modem pool. We did modem pool testing using a MicroTest LANModem. The LANModem was attached to the network via an Ethernet connection, and it offered both kinds of modem sharing services (modem-to-modem pool and node-to-node) to remote control software.

We installed the software on a stand-alone (remote) PC and then on a PC

attached to the network. The remote PC dialed into the network's modem pool and then connected to a PC on the same cabling segment as the modem pool. The remote PC initiated a batch file that launched a suite of applications on the host. The batch file loaded various files and carried out a series of mouse and cursor movements. We noted behavior such as smoothness of mouse and cursor movements, and compared the color consistency across the four products.

We awarded a satisfactory score for the capability to establish a connection through the pool. We awarded extra points if the host PC could dial back and reinitiate host mode, for use of NetWare IPX/ODI drivers, and for extra network connectivity (advanced Int14 or Int14B modes).

LAN NODE-TO-NODE:

This task simulated a help desk scenario. We made a connection through the network data layer using first Internetwork Packet Exchange (IPX), then IPX/ODI drivers. After making the connection, a batch file on the remote launched a suite of applications on the host. We noted file loading facility and mouse and cursor movement; the batch file then terminated the application.

We awarded a satisfactory score for connection with both kinds of drivers, and for visibly smooth operation in completing the test suite. We awarded extra points for features that facilitated completion of the task, such as the capability to use NetBIOS drivers instead of NetWare and work with OS/2 or Macintosh workstations that emulate DOS or Windows.

TERMINAL EMULATION:

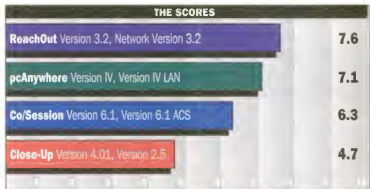
This task uses the remote software on the PC to dial out to a public information provider, CompuServe, as a terminal emulator. We logged on, down-

[See HOW WE TEST, page 85](#)

Executive summary

Ocean Isle's **ReachOut** offers superb screen, mouse, and file transfer speed and provides as many security options as Sing-Sing. **ReachOut** works great in modem-to-modem connection and is even better when directly connected via a network. Although the product is a bit light in terminal emulation features, it carries out the task respectably and installs quickly and easily. Operation is as smooth as silk—you'll think you're seated in front of the host PC.

Norton **pcAnywhere** from Symantec is extremely flexible and has strong security, an attractive interface, and a powerful scripting language for automating routine tasks. **pcAnywhere's** terminal emulation and modem pool options are robust, too. It doesn't, however, use Novell's IPX/ODI network drivers, an unexpected omission in a package with so many



other features. Windows installation can be a little daunting.

Triton's **CoSession** is a good mainstream remote control package that does just about everything, but it has no single feature that stands out over another, except a low price.

Close-Up from Norton-Lambert offers basic functionality with some obvious limitations. This is the choice for those

who need a modem-based remote control package that requires very little disk space and configuring, as **Close-Up** could run from a floppy diskette—it's the Geo Metro of remote control software, if you will. It performs all of the basic tests adequately (except for networked Windows remote control), but it does them with underwhelming minimalism.

THE Big Kahuna

We've been groping for an appropriate description of our 4DX2-66V. *Screaming*. Yeah, this machine definitely screams, but the adjective is worn. *Dragster*. Good, but that's what *PC World* called it when they said it was "by far the fastest machine we've ever tested." We didn't want a used word. *Greyhound*. Fast, but this system most certainly cannot be compared to a dog.

Then one of our Walter Mitty surfers said it: *The Big Kahuna*. In surfing vernacular, the Big Kahuna is the ultimate surfer – a surfer whose performance is most awesome and whose reputation

is truly magnificent. To PC dudes and dudettes, Gateway's 4DX2-66V is the Big Kahuna of personal computers – the most awesome PC on the planet.

But you won't find this Big Kahuna flashing on just any beach. This totally tubular machine can only be found at Gateway 2000. Check out the price. It's radical, man.

If you're looking for the Big Kahuna, get a Gateway 2000 4DX2-66V!

▶ 4DX2-66V

- 66MHz 486DX2 Intel® Processor
- 8MB RAM, 256K Cache
- 3.5" Diskette Drive **AND CD-ROM Drive**
- 340MB 13ms IDE Hard Drive
- Local Bus IDE Interface
- Intel OverDrive Socket
- VLB ATI Ultra Pro with 1MB VRAM
- 15" Color CrystalScan™ 1572FS
- Desktop Case (Tower Upgrade)
- 8 16-Bit ISA Slots, 2 with 32-Bit VLB
- 124-Key AnyKey™ Keyboard
- MS-DOS®, Windows™ & Mouse
- Cool Tools for DOS
- Choice of Application Software

\$2995



800-846-2069

610 Gateway Drive • P.O. Box 2010 • North Sioux City, SD 57049-2000 • 605-232-2000 • Fax 605-232-2013
Sales Hours: 7am-10pm Weekdays, 9am-4pm (CT)

©1993 Gateway 2000, Inc. All other brands and product names are trademarks of their respective companies. Prices and configurations are subject to change without notice. Prices do not include shipping.

a!



December 1992
BEST VALUE, March 1993



March 1993



January 20, 1993



Timbuktu links Macs and PCs

Until recently there has been a distinct line drawn between the Macintosh and DOS/Windows camps. A true cross-platform remote control program is certainly as welcome as a Middle East peace agreement. Farallon Computing Inc.'s Timbuktu connects Mac and Windows AppleTalk clients to one another the same way standard remote control software allows control and access between PCs, but it uses the AppleTalk network as its data transportation vehicle.

Cross-platform remote control solves a number of different problems in a multiplatform environment. It allows users to work together on the platform that best suits them, offers the freedom to use "best-of-breed" software solutions regardless of platform, and allows IS staff to monitor software operation from an internal or external vantage point.

It is possible to use Timbuktu in conjunction with other packages (such as Digital Communications Associates

Inc.'s Remote Lan Node on PCs or AppleTalk Remote Access) to dial in to a Mac or PC network. These techniques are not officially supported by Farallon, however.

We tested Timbuktu on a Mac IIfx with a color display, 40-megabyte hard

three floppy diskettes to the Mac. The PC side was more complicated and took much longer.

Farallon's PC installation software grabs the location of a Microsoft Windows license out of the DOS environment and doesn't let the user change the

The test suite from the Macintosh ran as though connected through a 9,600-bit-per-second modem rather than the much faster LocalTalk.

disk, and 8 megabytes of dynamic RAM, connected via Farallon's LocalTalk PhoneNet to a PC using a Farallon PhoneNet for PC ISA card. Installation of the software on the Macintosh required one mouse click and feeding

default location of the Windows drivers. According to Farallon, this restriction is necessary to maintain Windows compatibility. Worse, the package also missed the location of the PC's network drivers, which would later crash the PC. The

PhoneNet Card II can use only Interrupt 3, 4, or 5 — interrupts that are usually already in use by something else. This can require changes to the software and to the hardware configuration.

PhoneNet uses the AppleTalk protocol and Novell's ODI drivers exclusively to talk to other Macs using Timbuktu under Apple's AppleShare. If you use NetBIOS drivers (Artisoft, Banyan Invisible, etc.) or NDIS (Microsoft LAN Manager, DEC Pathworks, or IBM's LAN Server) drivers, you'll be unable to connect PCs to Macs with Timbuktu.

We encountered some difficulty in getting our configuration to operate correctly. We called Farallon and found that our Thomas Conrad TCNS network card is not officially supported. Farallon provides a list of tested and approved boards that meet both IPX and AppleTalk specifications. We were able to work around what appeared to be a Windows driver conflict with a fix sug-

See TIMBUKTU, page 86

REPORT CARD

Remote control software

				
		Co/Session	Norton pcAnywhere	ReachOut
Modem version		Version 4.01	Version 6.1	Version 3.2
LAN version		Version 2.5	Version 6.1 ACS	Network Version 3.2
Modem version list price		\$199	\$179	\$228 (host and remote)
LAN version list price		\$795/eight users	\$295/100 users	\$645/eight users
Performance	(Weighting)			
Installation and configuration	(75)	Very Good	Good	Very Good
Task 1: Modem-to-modem	(125)	Satisfactory	Very Good	Good
Task 2: Modem-to-modem pool	(125)	N/A	Very Good	Good
Task 3: LAN node-to-node	(100)	Poor	Very Good	Satisfactory
Task 4: Terminal emulation	(100)	Good	Good	Excellent
Administration	(100)	Very Good	Satisfactory	Very Good
Speed				
Modem-to-modem	(50)	Good	Satisfactory	Very Good
LAN node-to-node	(50)	Satisfactory	Good	Very Good
Documentation	(75)	Very Good	Satisfactory	Very Good
Support				
Support policies	(25)	Good	Very Good	Very Good
Technical support	(50)	Good	Satisfactory	Good
Value	(125)	Poor	Good	Very Good
Final score		4.7	6.3	7.1

GUIDE TO REPORT CARD SCORES

InfoWorld reviews only finished, production versions of products, never beta test versions.

Products receive ratings ranging from unacceptable to excellent in various categories. Scores are derived by multiplying the weighting (in parentheses) of each criterion by its rating, where:

Excellent = 1.0 — Outstanding in all areas.

Very Good = 0.75 — Meets all essential criteria and offers significant advantages.

Good = 0.625 — Meets essential criteria and includes some special features.

Satisfactory = 0.5 — Meets essential criteria.

Poor = 0.25 — Falls short in essential areas.

Unacceptable or N/A = 0.0 — Falls to meet minimum standards or lacks this feature.

Scores are summed, divided by 100, and rounded down to one decimal place to yield the final score out of a maximum possible score of 10 (plus bonus). Products rated within 0.2 points of one another differ little. Weightings represent average relative importance to InfoWorld readers involved in purchasing and using that product category. You can customize the report card to your company's needs by using your own weightings to calculate the final score.

Products receive InfoWorld Buyers Assurance Seals if they meet the following conditions: Software vendors must offer 60-day money-back guarantees on the products, and hardware vendors must offer a one-year repair or replacement warranty. No product is eligible that receives a score lower than Satisfactory in any of our Report Card categories. Vendors who qualify have signed contracts with InfoWorld that detail these support policies. InfoWorld does not charge for the Buyers Assurance Seal. We award the Recommended Seal to products that, in addition to the above criteria, receive a final score of 8.0 or higher.

Teach an old dog new tricks with Flashpoint.®

Are management and users hounding you for easier information access and new graphical interfaces? Do you need to extend the life of valuable legacy applications without adding to your maintenance backlog?

Now Flashpoint from KnowledgeWare® gives you the jump on client/server technology and the critical need to integrate information while preserving legacy applications. Windows™-based Flashpoint quickly and seamlessly integrates new and old applications residing on host, LAN and PC platforms for a graceful transition into client/server. Desktop users can cut-and-paste information from any spreadsheet, database or other favorite application, no matter where it resides.



Flashpoint slashes development time of GUI front ends by up to 90 percent and drastically reduces maintenance - revitalizing legacy systems by giving them the same graphic "look-and-feel" of other corporate applications. Plus it partners with KnowledgeWare's ObjectView™, ideal for developing client/server database applications.

Depend on KnowledgeWare for proven tools to turbocharge your move to client/server. Our unequalled experience and expertise back you with comprehensive consulting, training and technical support services.

Jim Hill,
manager of order
processing systems
for Deere & Company,
used Flashpoint to
combine four legacy
applications into an
integrated system for
dealers. Flashpoint's intuitive development
environment shielded developers from the
complexities of interface programming and
PC-to-mainframe communications.



KnowledgeWare®

KnowledgeWare, Flashpoint, and ObjectView are registered trademarks of KnowledgeWare, Inc. All other trademarks belong to their respective holders. ©1993 KnowledgeWare Corp., all rights reserved.

KnowledgeWare offers FREE ObjectView and Flashpoint seminars and FREE demo diskettes. Call us today at (800)338-4130 or (404)231-8575.

“Auto-configuration
of user fax
services complete.”

NET SatisFAXtion® Software



“Fax received.
Automatically routing
to Sara White.”

NET SatisFAXtion® Software



To get control of ne you need produ



If your network print and fax services aren't smart enough to tell you what they're doing, here's a word to the wise: Maybe you should consider NetPort™ II

print servers and NET SatisFAXtion® software from Intel.

Because not only will they tell you what's up, they'll give you total control of the print and fax services on your NetWare® LAN—from your workstation. Which gives you the ability to manage your network, instead of it managing you.

In addition to managing fax services

remotely, NET SatisFAXtion software allows you to set up your fax users' workstations from your desk. Faxing is as easy as printing from any DOS or Windows® application. And incoming faxes can be routed automatically.

With NET SatisFAXtion software, your users won't waste time running to and from the fax machine ever again.

“Executing
auto-configuration
of print server.”

NetPort™ II Print Server



“Print server status:
Accounting on-line;
Shipping off-line...”

NetPort™ II Print Server



work printing and fax, ts that talk back.

And unlike conventional fax machines, you'll be able to accurately track fax usage.

Intel's NetPort II print server is the simplest way to install and manage distributed printers. Each NetPort II server allows you to connect any two printers directly to the wire, anywhere on a LAN. And automatic



configuration gets your printers on-line quickly.

NetPort II print servers also include utilities that allow you to remotely monitor the status of your servers and update functionality over the LAN wire.

So call 1-800-538-3373, extension 1083 for detailed information, or

1-800-525-3019 for documents via fax. Press 9908 for NET SatisfAXtion software and 9907 for NetPort II print server.

Don't let your print and fax services get away from you. Call Intel today, and let your network know who's boss.

intel.

Close-Up

Version 4.01, LAN Version 2.5

Co/Session

Version 6.1, LAN Version 6.1 ACS

pcAnywhere

Version IV, LAN Version IV

INSTALLATION AND CONFIGURATION

Installation and configuration of Norton-Lambert Corp.'s Close-Up was the easiest of the products reviewed. One disk is all that is necessary for both Host and Remote, which Close-Up aptly calls Customer and Support. Phone Book administration requires only knowing the telephone number to call. There are more than 100 modems to choose from, with a number of configuration options for each to choose from. Both the modem and network version can fit in a subdirectory and take up less than a megabyte total—very useful for portable PC users.

Score: Very Good.

There are two parts to each version of Triton Technologies Inc.'s Co/Session: a host and a remote. During host installation, Co/Session prompts you with a variety of installation options including whether the program should make required changes to the Windows SYSTEM file.

Co/Session Host uses only 63K of RAM and automatically loads into high memory when it is available. The remote software takes 123K of memory but can also be loaded into high memory. The program's chat mode doesn't work in a graphics environment.

Configuration of the Co/Session modem version involves setting hardware, security, and performance specifications via the Options Menu and then detailing the remote user parameters in the Phone Book Menu. The Phone List has an extensive choice of modems, including eight user-definable choices. **Score: Good.**

MODEM-TO-MODEM

Close-Up connects and can do limited dial-back configured via the password option in user setup. Connection takes place very quickly, and Close-Up warns if no passwords have been entered for the host or the remote. Screen updates were smooth, but mouse movements were somewhat jerky. **Score: Satisfactory.**

Co/Session connected and established a session on the host quickly. Screen movements were smooth and mouse movements were on the mark.

Co/Session requires that the host display be of equal or lower resolution than the remote in order to display correctly. So, for example, a Super VGA host in 800-by-600 mode displays as 640-by-480 on a remote PC in standard VGA mode.

We had color fidelity trouble with Quattro Pro and with Microsoft Windows 3.1's opening screen—the colors that displayed on the remote didn't match those of the host. Co/Session supports dial-back to a remote PC user mode.

There is limited scripting within Co/Session, but Triton offers Session/XL for more complex scripting as a stand-alone product (\$129). **Score: Very Good.**

Both pcAnywhere and pcAnywhere/LAN are installed similarly, asking for full or Windows-only installation. A standard installation creates most default choices; the advanced options present an opportunity for a customization orgy for both the host and remote parameters. The network version further establishes where the software directories should be and asks whether those directories should be private or shared.

Symantec Corp. seems a bit overzealous in providing help for the Windows customization operations. But better too much help than not enough.

Score: Very Good.

We were able to quickly connect to the host PC from the remote using pcAnywhere. We launched the batch file application test suite. Like Co/Session, pcAnywhere had difficulty with color fidelity in Microsoft Windows' opening screen. We had to use OEMM's Loadhi to load the host software into upper memory—it's not automatic as in ReachOut and Co/Session. We found no difference in operation. Screen updates were always smooth, although remote mouse operation occasionally lagged behind the host. This could be annoying if you had to rely upon the mouse location for making a number of rapid selections.

An extensive script language is included with pcAnywhere (both versions) that exposes one of pcAnywhere's roots: a product called ASCOM. The scripting language makes task automation very easy for those willing to take the time to investigate the language.

Score: Very Good.

MODEM-TO-MODEM POOL

Close-Up cannot accommodate a modem pool configuration. **Score: N/A.**

We dialed into a PC through a modem pool using the LAN Version 6.1 ACS of Co/Session. Co/Session could dial out through a Microtest LANModem to remotely control another PC running Co/Session, and the roles could be reversed. But Co/Session could not dial back through the modem pool.

Co/Session offers the choice of either Init4 or NACS/NASI modem pool methods. There are two modes: synchronized and full speed. Synchronized mode is designed to keep the host display refresh parallel with that of the remote, which slows operation of the host. Full speed mode, especially helpful with batch processes, allows the host to run ahead while the remote screen catches up. Even in synchronized mode, however, the batch file-driven host session showed noticeable jumpiness, compared to, say, ReachOut.

Score: Very Good.

The remote pcAnywhere modem version can use Init4-type modem pools. It found the LANModem correctly, and then the host. pcAnywhere was able to dial back from the host to the remote via the modem pool. Screen display and mouse movement were a bit jumpy during execution of the application suite. A call to technical support confirmed that Symantec is aware of this problem. The LAN version is able to use a wide range of modem pool types: Init4, NACS/NASI, Telebit ACS, and NetBIOS. Strangely, pcAnywhere cannot use Novell Inc.'s Internetwork Packet Exchange/Open Data-Link (IPX/ODI) drivers, now in use by a majority of NetWare installations, a potentially major hurdle for network use. **Score: Good.**

LAN NODE-TO-NODE

When we attempted to connect across the network, Close-Up scanned the network for Close-Up hosts and offered to connect to them. The product supports CGA graphics only. It was unable to support VGA or Windows remote control. We were unable to complete the task due to this shortcoming. **Score: Poor.**

We used Co/Session ACS to easily connect the remote PC to a network node using Internetwork Packet Exchange/Sequenced Packet Exchange (IPX/SPX); the remote PC used NetWare IPX with Open Data-Link Interface (ODI) drivers. The Quick Connect feature (via the F1 key) lists all network users logged in a Co/Session session. Screen updates and mouse movements were clean and quick. Color inconsistency with Quattro Pro was still a problem, however. **Score: Very Good.**

The LAN version is able to use NetBIOS or IPX for remote-to-host connectivity. All hesitation and jumpiness were absent in the IPX connection. The extensive variety of printing options also increases pcAnywhere's flexibility. Networks using Novell's IPX/ODI drivers are incompatible with the LAN version of pcAnywhere. **Score: Satisfactory.**

TERMINAL EMULATION

The host mode of the modem version of Close-Up can operate as a terminal emulation program. There is only one terminal type, however: TTY-type operation. Xmodem is the only download protocol available.

Score: Satisfactory.

You can choose Co/Session, Co/Session ACS, DEC VT100 and 102, and TTY from the Co/Session Phone Book. Although no parity settings are available, Co/Session senses the parity of the host. The program also offers the Xmodem download protocol.

Score: Good.

What pcAnywhere lacks in modem network driver support it makes up in terminal emulation capability with terminal types, as well as a large list of download protocols. Coupled with pcAnywhere's extensive script language, the product even gives Procomm Plus a run for its money. **Score: Excellent.**

See CLOSE-UP, page 84

See CO/SESSION, page 84

See PCANYWHERE, page 84

ReachOut

Version 3.2, Network Version 3.2

INSTALLATION, CONFIGURATION

Initially, ReachOut's installation program couldn't find our Windows subdirectory, but we were able to adjust the defaults and tell the program where to find them; from there, installation was smooth sailing.

We had some difficulty initially in getting the remote display to recognize Windows in Super VGA. An Ocean Isle technician advised us to add a command to ReachOut's loading batch file to kick the remote into Super VGA mode: This happens with some display cards.

Once you install ReachOut, it's easy to customize any of the options, especially those for configuring security. You can load the ReachOut host program into high memory. The terminal emulation software is a separate package bundled with ReachOut; you must configure this program separately, but configuration is simple and you can launch it from within the main ReachOut program. **Score: Good.**

MODEM-TO-MODEM

Several layers of security protection are embedded into a ReachOut host. First, a host can lock out any or all remote viewers. Second, a confirmation option denies or allows access by a remote viewer pending a key press by the host user within a certain period following a prompt. You can set the display to deny or allow access if the key is not pressed. You can also disable the viewer. ReachOut offers full dial-back capabilities in both the modem and the network versions.

Once connected, the application suite launched correctly and quickly. Screen scrolling and updates were smooth, as was mouse operation.

In ReachOut, the remote PC must have a resolution equal to or greater than the host PC for correct display. **Score: Excellent.**

MODEM-TO-MODEM POOL

ReachOut's modem version allows use of Int14/1B, Telebit ACS, or NACs/ANSI modem pools. We chose the NACs/ANSI modem pool, and the remote modem version of ReachOut found the MicroTest LANModem immediately. If we installed for the incorrect modem pool type, ReachOut would lock up the host or remote PC immediately after the incorrect setting.

We dialed into the host PC using NACs/ANSI, then executed the application test suite. ReachOut had the smoothest screen redraw and mouse cursor movement of the three packages that could use a modem pool. ReachOut was able to dial back out of the modem pool to the remote user. **Score: Very Good.**

LAN NODE-TO-NODE

When a remote ReachOut PC connects to a host through a network, its performance is truly superlative in all respects. Screen redraws and mouse scrolling on the remote almost (and often) identically mimicked the host, especially with Microsoft Windows.

Score: Excellent.

TERMINAL EMULATION

ReachOut bundles RchTerm for terminal emulation. RchTerm connected with CompuServe correctly and downloaded a file. It offers only DEC VT100, VT52, ANSI, and TTY terminal types. Its download protocols include Kermit, Xmodem, Ymodem, Zmodem, and two types of ASCII. **Score: Good.**

See REACHOUT, page 85

Summary

INSTALLATION, CONFIGURATION

If a remote control software product could be considered "over-configurable," it would be pcAnywhere. Despite that, pcAnywhere has the most popular and useful options for modems, terminal emulation, download protocols, script choices, and communications methods. ReachOut has a very simple installation, but it made correctable default mistakes. ReachOut easily has the best security configurability. CoSession installs easily and offers extensive choices, but it didn't modify Windows software correctly during installation.

MODEM-TO-MODEM

ReachOut gives the smoothest and most faithful screen drawing and mouse control and, like pcAnywhere, dialed back quickly and unerringly. CoSession offers a choice of synchronized or full-speed remote nodes to accommodate different user needs. Both pcAnywhere and CoSession had color fidelity problems. Close-Up ran faithfully but more slowly than the others.

MODEM-TO-MODEM POOL

pcAnywhere has the greatest variety of options for remote modem connectivity and was able to dial back through the net but, as with CoSession, the modem pool selections are more limited. Close-Up doesn't offer modem pool connectivity.

LAN NODE-TO-NODE

ReachOut stands out in performance in this category. The operation of ReachOut is so smooth you'll think you are sitting at the host PC. CoSession performed well but displayed color infidelity throughout our tests. pcAnywhere performed without hesitation but cannot use Internetwork Packet Exchange/Open Data-Link Interface (IPX/ODI) drivers. Close-Up was unable to display graphics and therefore could not complete the task.

TERMINAL EMULATION

pcAnywhere's terminal emulation and downloading flexibility stand out from the rest of the pack. However, ReachOut's RchTerm program is also noteworthy in this category. CoSession's terminal emulation capabilities are limited, and Close-Up seems to offer terminal emulation only as an afterthought.

See SUMMARY, page 85

Hey, who turned out the lights???

Remote control programs are great, but they have one critical weakness—they can't turn on the computer. If you're away from the office and your computer is off, even the best remote-control program won't be of any use at all.

Not to worry. There is an answer, and it's not even going to put a big dent in your wallet.

Remote Power On/Off, from Server Technology Inc., lets you power up the computer simply by calling in to its modem. Even better, you can power it back down when you're done, and if for some reason the system freezes up, you can reset it.

It works like this: The system's control unit, which is essentially an on/off switch, is attached to your computer's modem and to the phone line. The control unit is also attached to the system's Intelligent Power Module, a unit that sits between the computer and the wall socket. When you call in on the modem line, the control unit sends a signal to the Intelligent Power Module instructing it to allow power through to the computer. When the computer receives power, it boots and loads your remote control software via a command you place in your AUTOEXEC.BAT file, and you're in business.

Actually, Remote Power On/Off has a few more tricks hidden in its circuitry. For starters, you can set the number of rings allowed before the unit kicks into action at one, six, or 12. If you want to share the line with voice calls, setting the number of rings to a higher number will give you additional time to pick up the phone before it turns on your computer. And you can also set the amount of time the computer will remain on after a call to 15 seconds, 2 minutes, 15 minutes or 60 minutes. Finally, you can set the unit to restart the computer if a call is not answered after eight rings—helpful in cases when the system has frozen.

Keep in mind, however, that there's no security in this arrangement. Any call to the modem line will activate the Remote Power unit, so you will want to make certain to activate the security feature of your remote-control software to prevent unauthorized accesses.

Remote Power On/Off lists for \$169, but you can come close to saving that much in a single year's worth of reduced utility bills. And the great thing is you won't have to worry about a janitor accidentally turning off your computer. Nor will you have to call a coworker late at night to beg him or her to go down to the office and turn the computer back on so you can download critical data you need early the next morning.

Server Technology is located in Santa Clara, Calif., and can be reached at (800) 835-1515.

— Patrick Marshall



Server Technology's Remote Power On/Off eliminates the need to leave your PC running.

OUCH! EEK! OOW! STOP! #@%!

When Dell cut prices up to \$300 on its Performance Series, IBM and Compaq reacted with a few choice words. The price cuts aren't the only thing the competition reacted to; these systems already offered up to 50% better performance than our previous systems, and at up to 25% lower prices. Yikes!

DELL™
800-678-7686

WHEN CALLING, PLEASE REFERENCE #1104M
HOURS: 7AM-9PM CT MON-FRI, 8AM-8PM CT SAT, 10AM-3PM CT SUN
IN CANADA, CALL 800-668-3021. IN MEXICO CITY, 228-7811



Each system is custom-built. With 15 different models in our 496 line — over

*Quantities available in USA only for registered owners of Dell Performance Series. Provided by Best Buy Service Corporation. On-site service may be available. Microsoft Corporation. LINUX is a registered trademark of LINUX System Laboratories.

THE DELL® 333a/L 1386 SX 53 MHz SYSTEM

- LEASE: \$44/MO.
- 2MB RAM
- 120MB (17mm) HARD DRIVE
- 3 ISA EXPANSION SLOTS
- VGA 800 MONITOR
[14", 800 X 600, .39mm]
- ONE DISKETTE DRIVE (3.5" OR 5.25")
- MS-DOS® 5.0



OUR FASTEST 386SX.

(Don't let it fool you. Actually, it's a lot faster than a speeding bullet.)



GUARANTEED RESPONSE.

Amazingly easy to use, and includes comprehensive documentation. But if you ever have questions, call us. We guarantee you'll talk to an expert within 5 minutes, or if you prefer, we'll call back within an hour.*



READY TO ROCK 'N' ROLL.

Intel isn't the only thing inside this system. Everything can be custom configured: modems, network adapters, critical software, the whole kit and caboodle.

THE DELL 425a/L 1486 SX 25 MHz SYSTEM

- LEASE: \$55/MO.
- 4MB RAM
- 170MB (17mm) HARD DRIVE
- 3 ISA EXPANSION SLOTS
- UPGRADEABLE PROCESSOR
- ACCELERATED LOCAL BUS VIDEO WITH 512KB VIDEO RAM
- SVGA 1024i MONITOR
[14", 1024 X 768, .28mm]
- ONE DISKETTE DRIVE (3.5" OR 5.25")
- MS-DOS 3.0



UP TO 65% QUICKER MAINTENANCE.

It's easy to get into this computer. Just loosen a couple of thumbscrews for easy access to the modular chassis.



UP TO 2.6 TIMES THE VIDEO PERFORMANCE.

With our accelerated local bus video revving up your screen, who needs a VCR?



GUARANTEED COMPATIBILITY.

Our computers are network-compatible with Novell®, Banyan®, and UNIX® systems. And we're the only company with a written compatibility guarantee.*

THE DELL 433a/M 1486 SX 33 MHz SYSTEM

- LEASE: \$74/MO.
- 4MB RAM
- 170MB (17mm) HARD DRIVE
- 6 ISA EXPANSION SLOTS
- UPGRADEABLE PROCESSOR
- ACCELERATED LOCAL BUS VIDEO WITH 1MB VIDEO RAM
[UP TO 19 MILLION WINMARKS]
- SVGA 1024i MONITOR
[14", 1024 X 768, .28mm]
- ONE DISKETTE DRIVE (3.5" OR 5.25")
- MS-DOS 5.0



UP TO 160% FASTER VIDEO.

Faster PageMaker redraws and lightning-quick Windows® repaints. Speed freaks, rejoice.



GREATER UPGRADEABILITY.

You can upgrade all the way to the top 486, the 66MHz DX2. You'll even be able to add the Pentium™ technology when Intel.



SYSTEM PERFORMANCE BOOSTED 26%.

With our optimized cache as an option, you can give your system a boost whenever you want.

THE DELL 466/ME 1486 DX2 66 MHz SYSTEM

- LEASE: \$111/MO.
- 4MB RAM
- 170MB (17mm) HARD DRIVE
- 4 EISA/2 ISA EXPANSION SLOTS
- UPGRADEABLE PROCESSOR
- ACCELERATED LOCAL BUS VIDEO WITH 1MB VIDEO RAM
[UP TO 29 MILLION WINMARKS]
- ULTRASCAN™ 14C MONITOR
[14", 1024 X 768, .28mm, NII]
- ONE DISKETTE DRIVE (3.5" OR 5.25")
- MS-DOS 5.0



UP TO FOUR TIMES FASTER DATA TRANSFER THAN ISA.

You get a 32-bit EISA expansion bus that transfers data at up to 33 megabytes a second. To understand what it does for your computer, drink about eight million cups of coffee.



GUARANTEED ACCOUNTABILITY.

We're the only computer company to guarantee—in writing—compatibility, fast response to your questions, and quick service.* Two-thirds of the FORTUNE 500® companies rely on us. So should you.



GOOD NEWS FOR THE POWER HUNGRY.

It's easy to upgrade to the top 486, the 66MHz DX2. If you're still power hungry, you can add Pentium technology—the next generation from Intel.

THE DELL 433/T 1486 DX 33 MHz SYSTEM

- LEASE: \$91/MO.
- 4MB RAM
- 230MB (16mm) HARD DRIVE
- 8 ISA EXPANSION SLOTS
- UPGRADEABLE PROCESSOR
- ACCELERATED LOCAL BUS VIDEO WITH 1MB VIDEO RAM
[UP TO 19 MILLION WINMARKS]
- SVGA 1024i MONITOR
[14", 1024 X 768, .28mm]
- ONE DISKETTE DRIVE (3.5" OR 5.25")
- MS-DOS 5.0



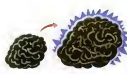
UP TO 18% FASTER SYSTEM PERFORMANCE.

Good thing you don't have to worry about the highway patrol.



33% MORE SLOTS.

With eight slots, you can add the network and communication cards you need for a great low-cost server.

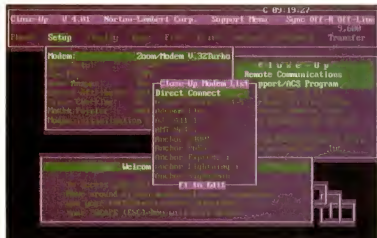


UP TO 86% MORE DISK CAPACITY.

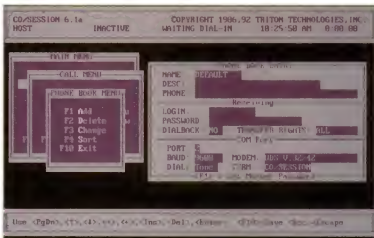
Our floor-standing model has a disk capacity of up to three gigabytes. Talk about mind-expanding performance...

5MHz, 33MHz, 50MHz, and 66 MHz — you can configure just the system you need. In fact, with our complete line of storage, memory, graphics and connectivity products, we can build over 15,000 different configurations.

System prices purchased after 7/1/92. For a complete copy, please call our TechFax line at 1-800-950-3339 or write Dell USA L.P., 9505 Arbutus Blvd., Austin, TX 78759-7299. Attention: Quantities. *Leasing arranged by Leasing Group, Inc. All in our service center system prices. \$199,995 list price obtained by leasing \$199,995 for 2.5 at 1024 x 768. The Intel Inside logo is a registered trademark and Pentium, 486 and 386 are trademarks of Intel Corporation. MS-DOS is a registered trademark and Windows is a trademark of Microsoft Corporation. FORTUNE 500 is a registered trademark of The Time Inc. Magazine Company. Dell declares proprietary interest in the marks and names of others. ©1993 Dell Computer Corporation. All rights reserved.



Close-Up offers a long list of modem choices, but it lacks modem pool connectivity.



Co/Session provides a default phone book entry as a template for other entries. The program accomplishes the basic tasks and is low priced.

Close-Up
(Continued)

Co/Session
(Continued)

pcAnywhere
(Continued)

ADMINISTRATION

What little there is to administrate is easily done by making choices from Close-Up's hierarchical menu structure. **Score: Very Good.**

All versions of Co/Session allow log tracking as well as session recording and playback (which somewhat substitutes for macro making and editing, and batchwork). **Score: Satisfactory.**

The program offers extensive administration options including hardware diagnostics and full control over the program defaults. **Score: Very Good.**

DOCUMENTATION

The *Support/ACS, Customer Terminal, and Network Remote* manuals explain operation well. They offer extensive menu explanations, discuss ongoing operation issues, and offer step-by-step descriptions of scenarios that describe what Close-Up can be used for. Also well covered are Close-Up's terminal log-in scripts and command-line options. **Score: Very Good.**

Co/Session comes with the *Host Operation Application* and a *Remote Operation Support Guide*. Both guides are useful for making the product work given a wide variety of hardware and software combinations. Extensive appendices address problems and troubleshooting, as well as issues specific to hardware and software. No on-line help is available in the program. **Score: Satisfactory.**

Each product has a users' guide, which includes an overview, installation information, a common usage and a reference section, as well as a script language reference and an extensive appendix with a troubleshooting guide and common-problem solutions. **Score: Very Good.**

SUPPORT POLICIES

Unlimited support (not toll free, but free callback) is available Monday through Friday from 7 a.m. to 5 p.m., Pacific time. Support is available via fax and a remote on-line connection. **Score: Very Good.**

Unlimited telephone support via a toll line is available from 8:30 a.m. to 7 p.m. Eastern time, Monday through Thursday, and on Friday from 8:30 a.m. to 5 p.m. Eastern time. Support is also available via BBS and fax. Triton offers a 60-day money-back guarantee. **Score: Very Good.**

Unlimited telephone support via a toll line is available from 7 a.m. to 5 p.m. Pacific time, Monday through Friday. Support is also available via fax, BBS, and CompuServe. There is a 60-day money-back guarantee. **Score: Very Good.**

TECHNICAL SUPPORT

Our calls were answered in less than 30 seconds. We received correct answers to our questions. The staff was knowledgeable, courteous, and professional. **Score: Good.**

The Co/Session support staff was slow in returning our calls, but they were knowledgeable and professional. **Score: Satisfactory.**

We had to leave a message on each of our calls. Symantec returned our calls in each case within 45 minutes. The support staff was professional and very knowledgeable. One technician suggested a variety of Windows installation tips, which he faxed to us promptly. **Score: Very Good.**

VALUE

At \$199 for Close-Up's modem version and \$795 for the eight-user LAN version, Close-Up is the most expensive of the four remote control packages we tested and the least impressive. Close-Up does handle the basic remote control tasks satisfactorily, and it is ideal where storage is at a premium (for floppy disk-based and portable PCs). However, it lacks the capability to handle graphics applications and is very weak in its network capabilities. **Score: Poor.**

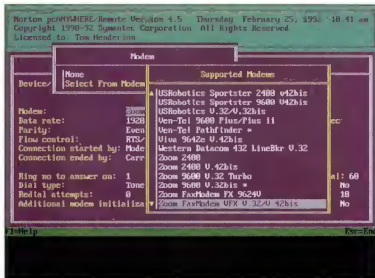
The Co/Session modem package costs \$179 (the same as ReachOut). The LAN version costs \$295 for as many as 100 users on a single server, making it the least expensive of the LAN products. Co/Session displays its strength and versatility in general-purpose remote control functionality, flexible customization and modem pool options, ease of installation, and a straightforward interface. However, it offers only adequate terminal emulation. **Score: Good.**

There are separate pcAnywhere Host (\$129) and Remote (\$99) packages to accomplish modem-to-modem functionality — bringing the price for unnetworked operation to \$228. The LAN package is priced at \$645 for eight networked users. With its easy installation, smooth scrolling, abundant terminal options, and powerful scripting language, pcAnywhere is a strong contender. **Score: Good.**

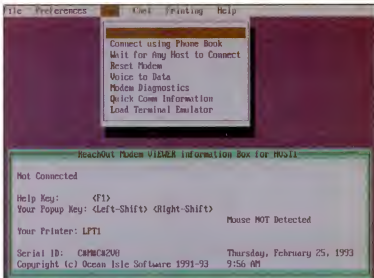
Company: Norton-Lambert, in Santa Barbara, Calif., can be reached at (805) 964-6767; fax: (805) 683-5679.

Company: Triton Technologies, in Iselin, N.J., can be reached at (908) 855-9440; fax: (908) 855-9608.

Company: Symantec can be reached in Cupertino, Calif., at (408) 253-9600; fax: (408) 253-5092.



pcAnywhere uses a staggering number of customizing options. You can automate common customization routines with a script.



ReachOut provides exceptional functionality at a very reasonable price. It even checks for viruses during file transfers.

ReachOut
(Continued)

ADMINISTRATION

ReachOut provides an easy-to-use hierarchical menu structure for most of the administrative tasks, such as activating audit logs, changing display mode, adding phone book listings, and so on. However, several tasks require exiting the program and executing a DOS-based utility. Tasks of this type include changing security and hardware options. **Score: Good.**

DOCUMENTATION

Both the ReachOut modem version and the ReachOut network version have guides that do a fine job of explaining the installation and ongoing usage of the products. Menu descriptions are discussed extensively. Windows modifications and sophisticated customization procedures are relegated to the appendices in both books. **Score: Good.**

SUPPORT POLICIES

Ocean Isle provides unlimited support via a toll line from 9 a.m. to 6 p.m. Eastern time. Support is also available via BBS and fax, and there is a 60-day money-back guarantee on the product. **Score: Very Good.**

TECHNICAL SUPPORT

We waited on hold approximately 5 minutes on each call. When we reached a technician, our questions were answered quickly, correctly, and professionally. **Score: Good.**

VALUE

The modem version of ReachOut costs \$179, and the network version is \$295 for four users and \$25 for each additional node. An eight-user configuration would cost \$395 and is thus the second-best priced product in our quartet. But even better than a great price, ReachOut offers great performance. Both the modem and network versions of Ocean Isle's ReachOut are top-notch remote control products. **Score: Very Good.**

Company: Ocean Isle Software, in Vero Beach, Fla., can be reached at (407) 770-4777.

Summary
(Continued)

ADMINISTRATION

pcAnywhere has extensive customizability and script templates. Close-Up offers easy administration as well, mostly due to the overall simplicity of the program. ReachOut offers easy administration in most areas; however, it requires exiting the program and using a DOS utility for some relatively important functions.

DOCUMENTATION

pcAnywhere's documentation is the most complete for the features of the product, but it is also a bit annoying: It's a perfect-bound, trade-size book that won't lie flat when opened. Close-Up's documentation offers help for typical remote control scenarios, a troubleshooting guide, and other useful information. ReachOut's documentation is fairly complete, but important issues such as Windows support aren't given enough attention. CoSession offers fine documentation but no on-line help.

SUPPORT POLICIES

Vendor support of these products is generally very generous. Symantec offers the most extensive combination of services. All offer unlimited support, but none offer a toll-free number. Only Norton-Lambert offers no money-back guarantee.

TECHNICAL SUPPORT

We got through to Norton-Lambert's technical support lines most quickly, but the technicians at Symantec seemed to have a slight edge in terms of product familiarity and in volunteering information in anticipation of our needs. Ocean Isle's and Triton's staffs were helpful and professional as well.

VALUE

ReachOut (\$179/\$395) gets the highest marks for silky-smooth remote host control at a very reasonable price. CoSession (\$179/\$295), with its more limited breadth, offers respectable functionality at a low price. pcAnywhere (\$228/\$645) offers an abundance of customization options and robust terminal emulation at almost double ReachOut's price. Close-Up (\$199/\$795) is overpriced for the limited range of features it offers.

HOW WE TEST / from page 73

Remote control software

loaded a file, and then disconnected.

We awarded a satisfactory score when we could easily change the program's terminal settings (bit-per-second rate, word length, parity, etc.), use at least XModem to download a file, and set a terminal listing for later recall. We awarded extra points for features that facilitate the task, such as automated log-on through a stored script or macro, a wide number of upload/download protocols, a variety of terminal emulation options, or documentation support for popular public bulletin board services (BBSes) or dial-in services.

ADMINISTRATION:

Remote control software generally requires ongoing customization to maintain effectiveness in a variety of situations. We awarded a satisfactory score when the administrator could change installation-related customizing details without the original installation software. We awarded extra points for extensive scripting capabilities and particular ease in effecting hardware, security, and default installation settings.

We evaluated the speed of these products by comparing the combined time it took each product to complete a suite of modem-to-modem and LAN node-to-node tests. We ranked the products from excellent to satisfactory based on their respective cumulative times.

DOCUMENTATION:

Documentation scores reflect the quantity and quality of both written and on-line information.

For a satisfactory score, documentation should describe the product and how to use it and include a table of contents and an index.

We awarded bonus points for a quick-start guide, on-line tutorial, on-line help, glossary, quick-reference card(s), and written tutorial. Poor organization, missing information, or an incomplete index lowered the score.

SUPPORT:

Support policies: Vendors who offer unlimited free support for their products received a satisfactory score.

We awarded extra points for money-back guarantees, toll-free lines, support via fax or BBS, extended support hours, customer corporate support plans, and the availability of a default script for a fee. We subtracted points if the vendor provided limited or no support.

Technical support: We based scores for technical support on the availability of technicians and the quality of service we received during the course of multiple anonymous calls to the vendor.

VALUE:

Value scores reflect the list price weighed against the task-oriented performance of each product, taking into account the competing products in the category.

TIMBUKTU / from page 76

Timbuktu links Macintoshes and PCs

gested by the technician.

We rebooted both the Mac and the PC and brought up Timbuktu guest services on each machine. First we took over the PC (running under Windows and Super VGA drivers) from the Mac. It connected almost immediately, passwords having already been established. Then we ran the test suite from the Mac. It ran as though connected via a 9,600-bit-per-second modem rather than much faster LocalTalk. This is due to the fact that Timbuktu initially transfers information

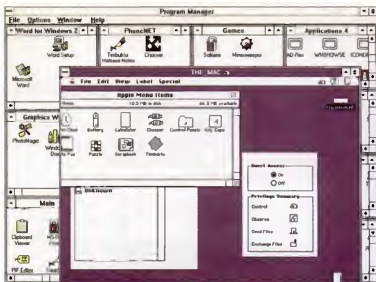
over that PC through the net — a three-way takeover. It was a useless but interesting exercise. We attempted to open a DOS window from within Windows and hung that window (which eventually required a system reboot).

We reversed roles and used the PC to take over the Mac. Once again, the mouse was jittery, but this time there was a minor amount of color loss, and mouse accuracy became a little more difficult and tedious. We found that the number of open windows on the Mac had a great deal to do with speed, and if we reduced the number of open windows, speed improved dramatically (and the temperature rose a little, too).

We disconnected, reversed roles again by taking over the PC from the Mac, and found the principle to be the same: Reducing open windows in Windows greatly increased operating speed. We achieved even faster performance by backing the PC Windows screen driver down from Super VGA to standard VGA. We used a standard (12-point) font in Windows, which allowed a 75-character margin without the need for left-right window scrolling.

To further improve speed, we reconfigured the platform to run with Ethernet by using an Ethernet network card in the PC (an NE2000 NIC) and the Mac (Rascal Datacom) to determine if the speed would improve dramatically (it did), but speed was the only feature that improved.

Timbuktu allows more than one ma-



Timbuktu allows you to view and access files on both the PC and Macintosh from a single screen.

chine to view a PC at a time, but we were unable to get more than two PCs to view a Mac at a time, and network traffic increased when we attempted to add the third connection.

Timbuktu connects PCs to Macs acceptably across Ethernet but less so across LocalTalk, and might be unacceptable when used with modems. Despite installation and speed problems, the program offers accurate performance with security options as strong as AppleShare allows.

For a complete turnkey solution to

attach a PC to an AppleTalk network, Farallon offers the Timbuktu for Windows PhoneNet kit: ISA version, \$379; MCA version, \$449. If you wish to use Ethernet, Token Ring, or another LocalTalk adapter, the Timbuktu for Windows software is available by itself for \$199 for a single user, \$999 for 10 users, \$1,999 for 30 users, and \$5,500 for a 100-user pack.

Farallon Computing, based in Alameda, Calif., can be reached at (510) 814-5100.

— Tom Henderson

BENCHMARKS

Remote control software

	Close-Up	CO/Session	pcAnywhere	ReachOut	Baseline tests ¹
Modem-to-modem test suite					
Windows — load & macro	6:20.6	3:18.8	3:27.1	2:24.9	2:02.4
File transfer					
Foreground	0:39.1	N/A	0:18.2	0:18.4	
Background	N/A	0:39.4	4:58.4	0:30.2	
1-2-3 file load & macro	0:32.7	0:58.2	1:04.3	0:32.6	0:18.7
Paradox file load	0:50.1	0:55.6	0:48.6	0:49.8	0:47.2
Word processing macro	0:58.3	2:41.9	2:16.5	0:58.0	0:37.5
LAN node-to-node test suite					
Windows — load & macro	N/A	2:17.3	2:12.6	2:09.6	2:02.4
File transfer					
Foreground	N/A	N/A	0:09.0	0:01.3	
Background	N/A	0:03.8	4:57.9	0:01.3	
1-2-3 file load & macro	N/A	0:34.3	0:39.8	0:31.1	0:18.7
Paradox file load	0:48.7	0:48.3	0:47.6	0:47.8	0:47.2
Word processing macro	N/A	1:58.4	1:45.4	0:54.4	0:37.5
Loading cc:Mail	0:03.0	0:02.8	0:04.0	0:02.5	0:02.2

Notes:

¹The baseline tests measure the time it takes to run the test suites without the overhead created by the remote control software.

Tests were performed on Compaq 386/250s with 4 megabytes of RAM and 210-megabyte hard disks.

We ran the node-to-node tests in a networked environment.

We ran the cc:Mail test from a networked drive; all other tests used applications running on the local drive.

**INFO
WORLD**

THE COMPUTER BOWL IS FILLING UP.



The Computer Museum's 5th Annual Computer Bowl rapidly approaches. The contestants are training hard. Sponsors are lining up. Enthusiasm is at a fever pitch. The whole world is watching. Don't wait another nanosecond. Make your ticket reservations now. The Computer Bowl is filling up. And if it's anything like last year, The Computer Bowl will soon runneth over.

EAST COAST TEAM: Mitchell E. Kertzman, Captain, Powersoft Corporation; John F. Burton, LEGENT Corporation; Neil J. Colvin, Phoenix Technologies Ltd.; Alain J. Hanover, Viewlogic Systems, Inc.; Patricia B. Seybold, Patricia Seybold Group. **WEST COAST TEAM:** Harry J. Saal, Captain, Network General Corporation; Jean-Louis Gassée, Be Incorporated; Jerry Kaplan, GO Corporation; Michael A. McConnell, SuperMac, Inc.; Lisa G. Thorell, Dataquest Incorporated. **"THE EXAMINER,"** Bill Gates, Microsoft Corporation. **JUDGES:** Dr. David L. Nelson, Fluent, Inc.; John F. Shoch, Asset Management Company. **FOUNDERS:** Pat Collins Nelson and Dr. David L. Nelson. **UNDERWRITERS:** Apple Computer, Inc. **OFFICIAL SPONSORS:** Bank of Boston, The Bank; BASF Information Systems, The Diskette; Intel Corporation, The Microprocessor; LEGENT Corporation, The Enterprise Systems Management Provider; MasPar Computer Corporation, The Massively Parallel Computing Company; Merrill, Pickard, Anderson & Eyre, The Venture Capital Firm; Network General Corporation, The Network Analyzer; Price Waterhouse, The Accounting Firm; Robertson, Stephens & Company, The Investment Bank; Stratus Computer, Inc., The Transaction Processor; Viewlogic Systems, Inc., The Official Electronic Design Automation Company; Visix Software Inc., The High Performance Workstation Software Company; Wellfleet Communications, Inc., The Internetworking Company. The Computer Bowl is broadcast on the PBS series, "Computer Chronicles," hosted by Stewart Cheifet. The Computer Bowl is a project to benefit the educational programs of The Computer Museum, 300 Congress Street, Boston, MA 02210. For tickets and sponsorship information (617) 426-2800 ext. 399.



REVIEWS

WordPerfect Windows 5.2 adds features

Improved tools include drag-and-drop editor, grammar checker, and file finder/indexer

BY JOHN LOMBARDI
CONTRIBUTING EDITOR

Over the years, WordPerfect Corp.'s practice of adding minor enhancements, fixes, and improvements to its highly popular word processing program without changing the version number has drawn the irritated attention of commentators. Now, with WordPerfect 5.2, the Utah company has accepted the criticism and issued an improved product with minor but important enhancements. Ironically, some critics complain that there isn't enough change for a new version.

Here we take a short look at WordPerfect 5.2 for Windows, highlighting the new features and improved scores over Version 5.1. If there were no changes in a category, we didn't include a writeup of it. For a complete review, see our last

comparison of Windows word processors (February 10, 1992, page 78). We based this review on criteria we developed in that comparison.

PERFORMANCE:

Basic editing: WordPerfect has implemented drag-and-drop text, bringing it up to par with Microsoft Corp.'s Word for Windows and Lotus Development Corp.'s Ami Pro. Aside from just having a nifty way to cut and paste, you can also hold the control key and drag to copy your text. Its other basic editing features remain the same. We found our basic editing ease-of-use task was easier to accomplish, contributing to a higher score. We rate basic editing excellent.

Proofing tools: Meeting the competition, the name of the game in the word processing wars, required the addition of a grammar checker to match Word for

Windows and Ami Pro. WordPerfect has added Grammarik 5, a stand-alone Windows grammar checker. Grammarik 5 (reviewed October 28, 1992, page 64) does an acceptable job of checking, but its integration with WordPerfect is a bit clumsy and complicated. The grammar checker is not fully integrated as it is in Word or Ami Pro. You can access Grammarik from a pull-down menu,

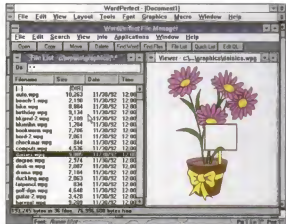
but when you are checking grammar, you do so through the clipboard and therefore can lose your document formatting. The grammar checker would be more useful if it were better implemented.

WordPerfect has also enhanced the spelling checker. You can now back-track, edit the text, and resume checking from a previous point in the text. Because of the awkward implementation of Grammarik 5, proofing tools remain very good, the same as in our last review.

Font and printer support: WordPerfect now ships with ATM, Version 2.5 and 12 decorative fonts from WordPerfect's Presentations package. However, you cannot use the ATM fonts with WordPerfect's printer drivers unless you purchase a third-party package made to bring fonts into WordPerfect (PrimeType or More Fonts) or use HP soft fonts. WordPerfect still ships with its impressive list of printer drivers, but you cannot take advantage of them with PostScript typescripts without an add-on package. This holds font and printer support to very good.

Import and export: WordPerfect has added Object Linking and Embedding support to the previously existing Dynamic Data Exchange, completing the data exchange and file linking capabilities of the program. WordPerfect does a superb job of handling graphics images and converting graphics files. In addition, WordPerfect has added support for Word 2.0 and Ami Pro 2.0. Other import and export features are unchanged. We rate import and export excellent.

Networking: WordPerfect has enhanced the network installation and added some helpful network administration capabilities. File sharing options remain the same, and the program still lacks the capability for user ID annotations. A welcome change to the net-



WordPerfect 5.2 for Windows' enhanced file manager lets you see a graphical preview of your files.

working support is E-mail integration. WordPerfect 5.2 for Windows supports any mail package that is VIM or MAPI compatible as well as Teamlinks for DEC, and they are working on a protocol to offer Profs support, which they plan to have available soon. We rate networking very good.

Speed: Overall, WordPerfect 5.2 for Windows was a bit slower than its predecessor. Its PostScript printing time for the complex file was quicker and more than 3 minutes faster than Word's. However, the PCL print time for the simple document was a minute slower. On balance, the speed score remains a good.

Macros: WordPerfect has improved its macro support, most notably in the macro help file. The on-line help now includes the complete documentation. If you wish to have a written manual, you can receive one for \$9.95. In addition, WordPerfect has enhanced and expanded the macro commands, bringing them up to par with Ami Pro and Word. The macro format is identical to that in Version 5.1 for Windows. We rate macros excellent.

EASE OF USE:

The most significant enhancement to WordPerfect 5.2 for Windows is its outstanding file finder/indexer. You can create an index to any or all files on your disk and then find all the files that have, for example, someone's name in them. The indexer will take some time for the first pass on a large disk; we did 37 megabytes of files in 24 minutes, but subsequent passes that update the index run much faster. The search process is extremely quick — almost instantaneous. The indexer and the super file manager both run outside Windows as stand-alone applications, and you can use them even if you don't use WordPerfect for

BENCHMARKS

INFO
WORLD

Windows professional word processors

	WordPerfect 5.2 for Windows Version 5.2	WordPerfect 5.1 for Windows Version 5.1	Microsoft Word for Windows Version 2.0
File operations: simple file*			
Open	0:10	0:06	0:03
Save	0:07	0:08	0:02
Print to HP LaserJet	2:47	1:27	1:33
Import WordPerfect 5.1 DOS	0:10	0:07	0:14
File operations: complex file*			
Open	0:18	0:14	0:03
Save	0:05	0:05	0:04
Print preview	0:11	0:13	0:17
Print to QMS-PS 810	2:09	2:48	5:23
Search tools: simple file			
Reorder chapters	0:22	0:21	0:49
Global search and replace	0:12	0:05	0:02
Search tools: complex file			
Search for last word	0:10	0:08	0:01
Global search and replace	0:10	0:09	0:02
Editing tasks: simple file			
Alter margin and repaginate	0:05	0:01	0:02
Change base font and repaginate	0:07	0:02	0:02
Jump to bottom	0:05	0:03	0:01
Generate table of contents	2:59	5:24	1:14
Editing tasks: complex file			
Reformat and repaginate (font)	0:07	0:08	0:02
Jump to bottom	0:07	0:06	0:01
Cut and paste	0:12	0:17	0:09
Layout tasks: complex file			
Place PCX file	0:09	0:08	0:07
Place EPS file	0:07	0:07	0:05

*Simple file is a 128-page manuscript divided into seven chapters.

*Complex file is a four-page, highly formatted document with a table, a PCX image, a PC graph, and an EPS file.

Windows. Indeed, you can also run the spelling checker and thesaurus outside of WordPerfect if you want to check the spelling of or find a synonym for an individual word.

WordPerfect has also enhanced its button bars to include more ready-made functions, considerable customizing capability, and a set of different preconstructed button bar variations for editing, formatting, tables, graphics, and the like.

In releases between 5.1 and 5.2, WordPerfect added macros to increase ease of use. There is an envelope macro, which works with WordPerfect or Windows printer drivers, that stores up to three return addresses and offers bar code support. There is a converter to make typog-

raphic quote marks, as well as several other macros. Ease of use has improved

improved over the previous version. The enhancements move this product closer

WordPerfect has enhanced its button bars to include more ready-made functions.

from Version 5.1; we rate it excellent.

VALUE:

In short, WordPerfect 5.2 is significantly

to the high-end battle between Ami Pro 4.0 and Word for Windows 2.0c, but WordPerfect still isn't quite in the middle of that fight. WordPerfect does, however,

remain the program of choice for expert WordPerfect for DOS users who want to convert to Windows because WordPerfect retains all of the characteristics and features of the DOS original, including all the powerful macro, table of authorities, and footnote and endnote capabilities. For these users, WordPerfect is still an excellent value.

John Lombardi is president of a major university and the author of five books. He has been working with computer since 1967.

REPORT CARD

**INFO
WORLD**

WINDOWS PROFESSIONAL WORD PROCESSOR

WordPerfect for Windows

VERSION 5.2



Criteria	(Weighting)	Score
Performance		
Basic editing	(80)	Excellent
Proofing tools	(80)	Very Good
Layout	(80)	Good
Mail merge	(50)	Very Good
Style sheets	(50)	Good
Font and printer support	(50)	Very Good
Reference tools	(50)	Very Good
Import and export	(50)	Excellent
Networking	(50)	Very Good
Speed	(50)	Good
Macros	(30)	Excellent
Documentation	(75)	Satisfactory
Ease of learning	(75)	Very Good
Ease of use	(130)	Excellent
Support		
Support policies	(25)	Excellent
Technical support	(25)	Very Good
Value	(50)	Excellent
Final score		8.0

PRODUCT SUMMARY

Company: WordPerfect, in Orem, Utah, can be reached at (800) 451-5151.

List price: \$495. Upgrade kit available to licensed WordPerfect 5.1 for Windows users for \$39.95, which includes disks and a pamphlet outlining new features; \$99 upgrade from WordPerfect; \$129 competitive upgrade.

Pros: File finder/indexing feature for extensive file management; improved button bar support; OLE support; Adobe Type Manager; improved macros.

Cons: Sluggish speed; still lacks collapsible outlining; lacks a mail function except inside tables.

Summary: WordPerfect has enhanced Version 5.2 for Windows by adding several features that mostly boost its ease of use. This product is a fine choice for people already standardized on WordPerfect, but if you're making a new move to a Windows word processor, Word and Ami Pro are still better choices.



WHEN IT COMES TO MAKING DECISIONS, GET TO THE POINT.

Now let the world's second largest computer maker help you make one decision that will impact decisions out in the field. The Fujitsu 325Point™ pen computer, from Fujitsu's Decision Series.

Inside and out, 325Point was built for portability. Its flexible platform supports multiple operating systems such as Windows for Pen, PenDOS™ and PenPoint™ as well as the latest software tools. So developers can easily design custom pen applications and field workers can enter data, process information efficiently and make better decisions on the spot. Plus 325Point's PCMCIA expansion capa-

bility gives you increased data storage and multiple communications options.

Small in size and big on brain power, this three pounder boasts an Am386™ SXLV microprocessor. Fujitsu's power management technology and 325Point's long battery life make it easy to put in a full day of computing. And a backlit screen makes reading easy on the eyes.

Decisions, decisions. Now there's a point where they've become easier. 325Point.

Contact Fujitsu: 1-800-831-3183 or FAX (33) 92-94-58-99 for international inquiries.

FUJITSU

325Point™ is a trademark of Fujitsu Personal Systems, Inc. All other brands and product names are trademarks of their respective holders.

COMPUTERS, COMMUNICATIONS, MICROELECTRONICS

©pyrified by atelal

Finely-Tuned Orchestrated Solutions...

It takes more than just great computers to meet the information management needs of today's businesses. It takes talented people who have the ability to orchestrate solutions using the finest products and services available. And that's precisely what you get when you choose Northgate.

Here are just a few examples of the hardware platforms that await you. Keep in mind that we'll configure your systems any way you like. And back them with service and support that was just named "Readers' Choice" by *PC Magazine*. Take a look, then call Northgate today.



Northgate® ZXPortable™

- 80486SX/25MHz or DX/25MHz processor
- 120MB hard drive (200MB available)
- 4MB RAM (expands to 16MB)
- VGA monochrome with 64 shades of gray or Active Matrix Color display with 256 simultaneous colors
- 86-key full-travel keyboard
- Nickel metal-hydride battery for up to 4 hours of power (3 hours color)
- 8.5" x 11" size
- Monochrome weighs 6.2 lbs.; color 6.4 lbs.
- MS-DOS 5.0 and Windows™ 3.1
- Trackball mouse
- Carrying case
- Free \$395 value PackRat PIM/contact management software

ZXPortable 486SX/25
Monochrome **\$1999** Color **\$3799**

ZXPortable 486DX/25
Monochrome **\$2199** Color **\$3999**

Optional Docking Station \$599

Docking Station Bundle with 14"
SVGA color monitor, *OmniiKey*
keyboard, 1.2MB floppy drive
and desktop mouse **\$999**



Northgate 486-VL

- 80486SX/25 processor
- Upgradable to OverDrive™ processors
- Two bus-master VESA local bus slots
- Local bus video with 1MB RAM
- 128K cache
- 4MB RAM (expands to 64MB)
- 100MB hard drive
- Space-saving case (tower available)
- 1.2MB or 1.44MB floppy drive
- 14" SVGA color monitor
- 101-S keyboard

\$1699 (Lease as low as \$62.86/mo.)*

As configured above with
80486DX/33 processor **\$1949**
(Lease as low as \$72.11/mo.)*

As configured above with
80486DX2/66 processor **\$2449**
(Lease as low as \$90.61/mo.)*



SlimLine® 486 ZXP-L

- 80486SX/25 processor
- Upgradable to H86™ processors and OverDrives™
- 1MB local bus video
- Virtual cache
- 4MB RAM (expands to 128MB)
- 100MB hard drive
- Space-saving SlimLine case
- 1.2MB or 1.44MB floppy drive
- 14" SVGA color monitor
- 101-S keyboard

\$1499 (Lease as low as \$55.46/mo.)*

Configured as shown with 80486DX/33 processor **\$1799** (Lease as low as \$66.56/mo.)*

Configured as shown with
80486DX2/66 processor **\$2299**
(Lease as low as \$85.06/mo.)*



Elegance 486 ZXP EISA

- 80486DX/33 processor
- Upgradable to other i486 processors and OverDrives; supports OverDrive based on Pentium architecture
- Six EISA expansion slots
- 128K cache (256K available)
- 8MB RAM (expands to 128MB)
- 240MB IDE hard drive
- Tower case
- 1.2MB or 1.44MB floppy drive
- Accelerated™ Windows video with 1MB RAM
- 14" SVGA color monitor
- 101-S keyboard

\$2949 (Lease as low as \$100.86/mo.)*

As configured above with 80486DX/50 processor **\$3249** (Lease as low as \$111.12/mo.)*

As configured above with
80486DX2/66 processor **\$3449**
(Lease as low as \$117.96/mo.)*

Elegance 486 ZXP

- 80486SX/25 processor
- Upgradable to i486 processors and OverDrives
- 64K cache
- 4MB RAM (expands to 32MB)
- 100MB hard drive
- Space-saving case (tower available)
- 1.2MB or 1.44MB floppy drive
- 14" SVGA color monitor
- 101-S keyboard

\$1599 (Lease as low as \$59.16/mo.)*

As configured above with
80486DX/33 processor **\$1899**
(Lease as low as \$70.26/mo.)*

As configured above with
80486DX2/66 processor and Tower
case **\$2399** (Lease as low as \$88.76/mo.)*

At Prices That Will Make You Applaud.



Northgate OmniLAN Systems

Northgate offers a variety of "plug and play" network solutions for up to hundreds of users. Here is just *one* example.

Option #1: Novell® Server

- Elegance™ ZXP 486DX/50 EISA
- 16MB RAM
- Adaptec 1740 SCSI controller
- 525MB hard drive
- 1.44MB floppy drive
- Intel Ethernet Express 32-bit Thinnert interface card
- VGA video adapter
- 14" VGA monochrome monitor
- 101-S keyboard
- FREE installation of Novell NetWare with NetWare purchase

\$4999 (Lease as low as \$165.97/mo.)*

Option #2:

Windows for Workgroups System

- Elegance™ ZXP 486DX/33
- 8MB RAM
- 340MB IDE hard drive
- 1.44MB and 1.2MB floppy drives
- Intel Ethernet Express 16-bit Thinnert interface card
- Accelerated Windows video with 1MB RAM
- 14" SVGA color monitor
- 101-S keyboard and mouse
- MS-DOS 5.0
- Microsoft Windows for Workgroups installed

\$2949 (Lease as low as \$100.86/mo.)*

Power Workstation

- SlimLine ZXP 486SX/25
- 4MB RAM
- 240MB hard drive
- 1.44MB and 1.2MB floppy drives
- Local bus VGA with 1MB RAM
- Intel Ethernet Express 16-bit Thinnert card
- 14" SVGA color monitor
- 101-S keyboard

\$1899 (Lease as low as \$70.26/mo.)*

Advanced Application Workstation

- Elegance™ ZXP 486DX/266
- 8MB RAM
- 240MB IDE hard drive
- 1.44MB and 1.2MB floppy drives
- Accelerated Windows video with 1MB RAM
- Intel Ethernet Express 16-bit Thinnert card
- 14" SVGA color monitor
- 101-S keyboard

\$2999 (Lease as low as \$102.57/mo.)*



Award-Winning

Northgate OmniKey™ Keyboards

- Choose 101NI with 12 F-keys on top; 102 with 12 F-keys on left or ULTRA with 12 F-keys on top and left
- Alps™ click/tactile key switches
- Independent inverted "T" cursor control and numeric keypads
- Limited dexterity features
- Rate select from 3-120 CPS
- Interchangeable CTRL, ALT, CAPS LOCK keys
- OmniKey utility disk
- Unmatched IBM™ compatibility
- FCC Class B certified



OmniKey/101NI or 102

ONLY \$89

OmniKey/ULTRA-T

ONLY \$129

**Call For More Information
800-453-0183**

GSA #G800K91AGS5193 PS01

Major credit cards, money orders, direct wire and approved company purchase orders accepted.



NORTHGATE

Solutions for Workgroups

7075 Flying Cloud Drive, Eden Prairie, MN 55344

©Copyright Northgate Computer Systems, Inc. 1989. All rights reserved. Northgate, OmniKey, Elegance, SlimLine and the Northgate "N" logo are U.S. trademarks or registered U.S. trademarks of Northgate Computer Systems, Inc. and the Intel Inside logo are trademarks of Intel Corporation. All other product and brand names are U.S. trademarks and registered U.S. trademarks of their respective companies. Prices and specifications subject to change without notice. Prices shown are U.S. dollars and do not include shipping and handling charges or appropriate sales taxes. Northgate assumes the right to substitute components of equal or greater quality or performance. All terms subject to arbitration.

— 100% MONEY BACK GUARANTEE

PhotoMagic offers fine image editing for less

Micrografx provides most Picture Publisher features in an impressive \$149 package

By PATRICK MARSHALL
CONTRIBUTING EDITOR

It's no surprise that Micrografx Inc., whose Picture Publisher won our most recent image editing and creation comparison, delivers a formidable new package into the hot category of low-end image editors. PhotoMagic 1.0, which Micrografx has priced at only \$149, is so good that it may capture not only much of the low-end market but some of Picture Publisher's market as well.

PhotoMagic faces direct competition — ZSoft Corp.'s current release of PhotoFinish 2.0. PhotoMagic is less expensive (PhotoFinish lists for \$199) and offers a better assortment of tools, but it lacks the handy auto-enhance utility that gives PhotoFinish its appeal.

FEATURES:

PhotoMagic has most of Picture Publisher's notable features — powerful and easy-to-control paint tools, a colorful and

well-designed toolbar, and excellent implementation of utilities for adjusting color or balance and calibrating your monitor. PhotoMagic includes a modified version of Picture Publisher's Color Shield, which allows you to select and protect specified colors in an image. PhotoMagic has also adopted Picture Publisher's use of JPEG and its implementation of thumbnails for finding and opening files.

PhotoMagic offers a superior zoom tool with an automatically opening zoom window that offers more control than Picture Publisher's already-strong tool. The EffectsBrowser shows the same careful attention to ease of use. Virtually any change you want to make to an image — adjusting the color balance, dithering, applying a special filter effect — is performed through the EffectsBrowser, which also provides a thumbnail of the image for previewing effects.

Finally, PhotoMagic is Object Linking and Embedding (OLE) compliant, so you can embed an image in another document. Then, when working on the document, if you need to alter the image all you have to do is double-click on it and the editing tools will appear.

The main thing that keeps PhotoMagic from being a serious threat as a high-end image editing and creation package is its lack of advanced prepress features, such as advanced printer controls and color separations.

PhotoMagic's selection tools — while very easy to use and powerful enough for most tasks — are not as powerful as Picture Publisher's. Nor does PhotoMagic supply drivers for scanners that are not TWAIN compatible.

If you don't need prepress capabilities, PhotoMagic offers surprisingly strong tools in an incredibly easy-to-use package. It's easily one of the lowest-cost image-editing programs available.

We reviewed PhotoMagic based on the criteria in our product comparison of image creation and editing packages (August 10, 1992, page 51).

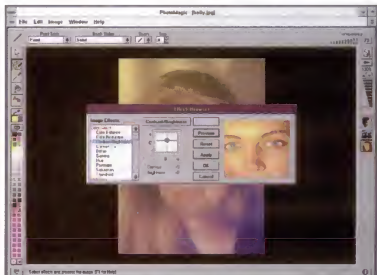
PERFORMANCE:

Image editing tools and effects: PhotoMagic handles basic editing tasks with aplomb.

The program's selection tools, which can also serve as masks, are flexible and easy to use. You can use tools to create freehand and polyline selections, and you can constrain the rectangle and ellipse tools to select squares and rectangles. You can then expand, or rotate the selection using the separate Transform tool. PhotoMagic provides controls over the transparency and edge blending when you paste a selection into a new location.

PhotoMagic's selection tools do have their limitations. Although you can make multiple selections, you can add to or subtract from a selection, and there's no way to edit a selection other than using the Transform tool.

The program's image correction and filtering features are strong and easy to use, but they are marred by a few basic weaknesses. All of PhotoMagic's filters and color-controls utilities are located in a single EffectsBrowser. The Effects-



With PhotoMagic's EffectsBrowser you can make any changes to the image. You can adjust the color balance, dithering, or apply a special filter effect.

Browser dialog box offers a scroll box containing options for brightness and contrast, color balance, posterizing, and a relatively generous selection of 26 filters. When you highlight a selection, well-designed adjustment controls will appear next to the scroll box. To the right of the controls is a thumbnail of the current image that displays a preview of your adjustments.

To adjust brightness and contrast, you drag an axis on a chart to adjust both at the same time. To adjust hues, you are offered a set of slider bars for adjusting the six primary hues in the image.

Unfortunately, although PhotoMagic provides utilities for adjusting brightness and contrast, color balance, hue, and saturation, it does not offer a color map or color curve for making — and saving for future use — global adjustments.

Nor does PhotoMagic provide an auto-enhancement feature to equalize an image and make adjustments in color tone and brightness and contrast. Such utilities are increasingly common in lower end photo editing programs, such as PhotoFinish and ImageAssistant. They are valued for quick and simple adjustment tasks.

We rate image editing tools and effects good.

Paint and draw tools: Similar to PhotoFinish, PhotoMagic's paint and draw tools are marked by relative strength in special features and weakness in the basics.

Although PhotoMagic provides a solid set of brushes, you cannot create and save custom brushes. You can control the transparency of paint applied with PhotoMagic's brushes, but you cannot feather the edges of strokes or have the brush apply only to lighter colors or only the hue of a color. There is no blur or sharpen brush for local application.

PhotoMagic overlooked another basic item in a painter's toolkit: the scratch pad. That means you must spend more time bouncing between the image and the tool controls to get the right effect.

But if PhotoMagic is a tad weak on basic features, it does offer a number of surprisingly powerful tools. For example, the program's smear tool lets you select from

five different degrees of pressure in smudging. And with the gradient fill tool, you simply pick the begin color and the end color, choose whether you want a linear or radial fill, and then drag the fill tool cursor in the direction you want the fill to go.

Micrografx has endowed PhotoMagic with a watered-down version of Picture Publisher's Color Shield. With the Color Shield tool, you pick color from an image for either protection or selection and use the preview feature to see where the selected color appears in the image. PhotoMagic's Color Shield, unlike Picture Publisher's, is limited to selecting a single color at a time.

PhotoMagic's zoom tool is unique. When you select the zoom icon, a smaller version of the image pops up on-screen. You then use the mouse to drag a rectangle on the smaller image, and the larger image will be zoomed to contain just the selected section. There's also a slide scale that you can use to move to different zoom levels with a mouse click.

Finally, PhotoMagic includes a wide assortment of special brush effects, including charcoal, crayon, chalk, colorizer, and marker.

Color models are limited to RGB and HSL, so you can't work in CMYK. That's not surprising because PhotoMagic does not provide for making color separations. The program's color picker is nicely designed; you can move easily within or between color models in selecting colors.

Overall, PhotoMagic's unique painting features cannot outweigh the program's weakness in its basic brush capabilities.

Paint and draw tools are satisfactory.
Import and export: As with other low-end image editing and creation programs, PhotoMagic cannot receive a score of excellent in this category because it does not provide for the creation of color separations or controls over dot pitch, press gain, and other prepress controls.

But PhotoMagic does support a healthy amount of file formats, including JPEG and Kodak's Photo CD. It also supports TIF, TGA, BMP, GIF, and PCX. You can also export, though not import, files in encapsulated PostScript format.

REPORT CARD INFO

IMAGE EDITING AND CREATION SOFTWARE

PhotoMagic

VERSION 1.0



Criteria	(Weighting)	Score
Performance		
Image editing tools and effects	(200)	Good
Paint and draw tools	(100)	Satisfactory
Import and export	(100)	Good
Speed	(75)	Good
Documentation	(100)	Good
Ease of learning	(100)	Very Good
Ease of use	(125)	Very Good
Support		
Support policies	(50)	Very Good
Technical support	(50)	Satisfactory
Value	(100)	Excellent
Final score		6.7

PRODUCT SUMMARY

Company: Micrografx, Inc. in Richardson, Texas, can be reached at (800) 733-3729. Ext. 5050; fax: (214) 234-1318.

List Price: \$149.

Requires: Intel 386-compatible system, DOS 3.1 or later, Windows 3.1, 4 megabytes of system memory, VGA.

Pros: Easy to learn and use, some unique tools, low price.

Cons: Weak control over painting tools, no color map, no scratch pads.

Summary: If you need low-end photo editing tools that are extremely well implemented, and if price is a factor, PhotoMagic can't be beat.

PhotoMagic supports the TWIN interface for scanners but does not provide non-TWIN drivers.

On the plus side, PhotoMagic's calibration utilities for the monitor, scanner, and printer earn it some extra points, as does the implementation of OLE for linking to other Windows applications.

Speed: PhotoMagic is right in the center of the pack when it comes to speed. You'll never feel the program is unduly slow, either in loading files, saving, or performing operations such as applying filters. Documentation is good.

DOCUMENTATION:

PhotoMagic's manual is adequate. Although the thin volume explains the program's features clearly, it would be more effective if it were more liberally illustrated and more thoroughly indexed.

The program's on-line help is more effective. PhotoMagic also uses Balloon help (borrowed from the Macintosh) for many options that appear in dialog boxes.

Finally, PhotoMagic makes good use of the status bar to inform the user about active program features.

Documentation receives a score of good.

EASE OF LEARNING:

Installing PhotoMagic is fast and painless. Once installed, you can get up to speed quickly with PhotoMagic's 10 short tutorials. Thanks also to the on-line help and status messages, most users should feel comfortable with all the program's features in only 2 or 3 hours of use. We rate ease of learning very good.

EASE OF USE:

Ease of use is PhotoMagic's strong suit, and Micrografx's attention to this is amply demonstrated by the design of most of the program's utilities. The zoom tool, for example, is easier to use than those in other programs. Intelligent use of slider

tion offers this feature, and it is helpful for adjusting pictures easily.

These gaps cannot, however, overshadow PhotoMagic's intuitive, well-designed interface. We rate ease of use very good.

SUPPORT:

Support policies: Free, but not toll-free, technical support is available 24 hours a day Monday through Friday and from 8 a.m. to 5 p.m., Central time, on weekends. Micrografx also offers support through its BBS, fax, or through CompuServe. Support is rated very good.

Technical support: On several occasions, we were unable to get through to technical support in 5 minutes or less. When we did reach the support staff, however, we found them to be helpful and knowledgeable about their product. We rate technical support satisfactory.

VALUE:

At \$149, PhotoMagic offers value that is hard to beat. While comparable in power to PhotoFinish 2.0 from ZSoft, PhotoMagic costs less.

As long as you don't need color separa-

tions or other prepress features—features not available in other programs in this price range either—you'll want to take a close look at PhotoMagic. You won't be able to find a program that offers as much power for that low a price.

And, as if the program wasn't enough, Micrografx has included nearly 200 reusable photos with the package.

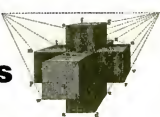
PhotoMagic is rated an excellent value.

Patrick Marshall is vice president at Pacific Analysis, an economic research firm based in Seattle.



Are you **wondering** what to do with your mainframe?

Can you really build **serious applications** on a bunch of **networked** PCs? Will any of it **work**? Do you need some **help**? Get Perspective!



Perspective

93 **Redefine the Mainstream.** *The InfoWorld PC Systems Forum.*

For PC systems professionals.



June 6-9

**Hyatt Regency, San
Francisco Airport
San Francisco, CA**

**Call 1-800-848-5381
for more information.**

**PhotoMagic's zoom
tool is easier to use
than those in other
programs.**

bars and other design elements in constructing controls for tools and filters make setting up an operation a snap.

Also worthy of special mention is the program's EffectsBrowser, which puts all image correction and special effects quickly at hand. Thumbnail previews make the adjustment easier.

Thumbnails are also provided for selecting image files to open, and the program generates thumbnails on the right side of the work screen so you can keep track of open files.

There are, however, several steps Micrografx could take to make PhotoMagic easier to use. Currently, the program displays only a single file format at a time. Setting the File Open box to display all compatible image formats would simplify things.

The addition of scratch pads for tools and color mixing would be beneficial, as well.

To better compete in this market, PhotoMagic definitely needs an auto-enhancement feature. Most of the compe-

INFO MARKET

Combining vision and technology, products drive the PC industry. As innovations become standards, the next revolution begins...and the future history of computing is being written by the companies whose products appear in InfoMarket.

NEW PRODUCTS

What's new? It's a question computer users never tire of asking. Smart buyers and trend-watchers look here for the latest in PC products and services.

SOFTWARE

From E-mail to project management, spreadsheets to utilities, here you'll find a wide range of power and value in software, all conveniently designated by category and platform availability—DOS, Windows, OS/2, Unix, and Macintosh.

HARDWARE

Everything you're looking for in the way of hardware—from cables to keyboards, peripherals to complete systems. You'll find it here, in one easy-to-shop "hardware store."

DIRECT CONNECTION

Here's your "quick reference guide" to a broad array of PC products and services. All organized under convenient, easy-to-find headings.

COMPUTER CAREERS

Careers grow and change with the PC industry. For both computer professionals considering a change and companies in search of qualified people, this is the place to meet.

TRADESHOWS

For the PC industry, trade shows are where products get seen and business gets done. This section of InfoMarket keeps you informed of important current and upcoming industry events.

For information about appearing in InfoMarket,
call 1 800 227-8365.

Connect a CD-ROM, SyQuest, Bernoulli, Tape Drive, Scanjet or other SCSI device to your parallel port and still use your printer with the

MiniSCSIplus



"This product...is darned near perfect."

—Jerry Fournelle Byte Magazine March 1993

"This year, the company outdid itself...
The MiniSCSI Plus is even more elegant than
its predecessor and almost twice as fast."

—Jim Seymour PC Magazine December 1992

- 100% Printer Passthrough
- Weighs Just 7.2 Ounces
- Powered By The SCSI Bus
- Only \$229.00

New from the company that invented parallel-to-SCSI adapters, the high-performance MiniSCSI Plus provides a simple and inexpensive way to connect SCSI devices to the parallel port of your desktop or notebook. For most notebook users, it's the only way to use SCSI devices. Nearly twice as fast as our original MiniSCSI, the MiniSCSI Plus lets you run up to 7 SCSI devices from almost any parallel port. Plus, an integrated cable makes it a snap to share SCSI devices with desktops and other notebooks.

Call For Details Today!

800-872-6867 • 800-TRANTRON

© 1993 Trantor Systems Ltd. All rights reserved. MiniSCSI Plus, the MiniSCSI Plus logo, and Transistor are registered trademarks of Trantor Systems Ltd. All other product names are trademarks of their respective companies.



Trantor Systems, Ltd.
5415 Randall Place
Fremont, CA 94558-3151
TEL: (510) 770-1400
FAX: (510) 770-9943

EPP Version Available!

Crammed into your laptop?

Are you outgrowing your laptop or notebook's capacity? Tired of software "quick fixes"? Now you can get the storage you need to effectively operate today's data-intensive applications and operating systems.

Up to 212 MB for notebooks

LSI specializes in internal upgrades. We can replace the factory-original hard drives in Toshiba, Compaq, and other major manufacturers' laptops and notebooks with higher-speed, higher-capacity drives without adding bulk or weight. If you're feeling the applications squeeze, call us. You'll be surprised how much room there is in your laptop...

Up to 1.1 GB
for laptops



Laptop Solutions, Inc.

(800) 683-6839

10700 Richmond Ave., #114
Houston, Texas 77042
Local: (713) 789-0878
FAX: (713) 789-8177

All product names are trademarks or registered trademarks of their respective owners.

The A.I.R. 486 EISA/VESA Local Bus "Total Solution."

A.I.R. meets the need for a "Total Solution" EISA/VESA VL-Bus manufacturer. The A.I.R. 486EI system board is industrial strength. With up to 256 MB on-board system memory, 512K cache and 3 EISA/VESA VL-Bus slots, the 486EI can handle any job.

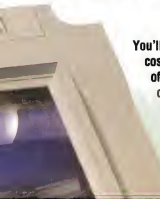
To support this system board, A.I.R. manufacturers a line of peripheral cards in EISA and VL-Bus configurations. With SVGA, Ethernet, SCSI and IDE peripheral support, no application to tough for an A.I.R. solution. Call A.I.R. today to order these industry leading products.



2188 Del Franco St
San Jose, CA 95131
(408) 428-0800
FAX: (408) 428-0950

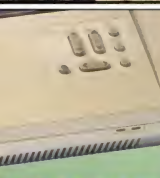
PC Screen to Big Screen!

Maximize Meeting Time... Minimize Expense



You'll save up to 87% of your meeting costs when you couple the full power of your computer with an ordinary overhead projector.

No more copies, slides or transparencies...and you can make changes on the spot, animate, and project variables, too.



Boxlight boasts the best prices, the most knowledgeable staff, the strongest guarantee and the fastest shipping.



BOXLIGHT
Your Telephone
SUPERSTORE
for Computer Projection!
(800)497-4009

It's easy! Plug the panel into your computer... Place it on any overhead projector... See your entries, edits and revisions right on the big screen!

Our Business is Helping You Show Off Yours...

Star Trek®: The Screen Saver

New from the makers of Alter Dark®, Star Trek: The Screen Saver saves your monitor from phosphor burn-in with fantastic displays based on the original Star Trek series. Watch your screen come to life with the crew of the Enterprise®, troublesome Tribbles, and Dr. McCoy's sick bay monitor. This incredible collection of colorful animated displays is enhanced with digitized sound effects from the original soundtracks. Hear the gentle cooing of the Tribbles, Mr. Spock's famous quotes, phaser blasts, bridge sounds, your favorite Star Trek themes, and more!

This stand alone screen saver does not require After Dark software to run, but all displays are fully cross-compatible with After Dark. Also includes screen-locking password protection, and SystemIQ™ Activity Monitor to sense computer activity and maximize system performance. For Windows® and Macintosh®.



EXTERNAL PC-VIDEO CONVERTER

Converts VGA output to NTSC.
Turn any color TV into a computer monitor. Use "Off The Shelf" Software for animated presentations on TV.

INCLUDES...

- Video Converter
- Software Utilities
- Cables
- AC Adapter



NEW LOW PRICE \$99

BOFFIN LIMITED

612-894-0595

FAX: 612-894-6175

2500 W. COUNTY RD. 42 • #5
BURNSVILLE, MN 55337

xBASE Data Entry Network

The TransTerm 5 is a work station data entry/display terminal for on-line shop floor data collection into PC/AT based systems. The unit is one of a family of such terminals which features LC displays for operator prompting and data entry via a membrane keyboard or an optional barcode wand (Code 39, UPC, etc.). A multi-terminal polling controller (up to 250 stations) and an xBASE compatible software package also available.

System costs below \$300 per station.

Call for information.



Options - Bar Code Wand (shown), Bar Code Slot Reader or Mag Stripe Card Reader.

COMPUTERWISE, INC.

302 N. Winchester
Olathe, KS 66062
(913) 829-0600
(800) 255-3739
FAX: (913) 829-0810

Prevent Screen Burn-in After Dark™ for Windows 2.0 New Version!

After Dark now has over 40 incredible displays and two level password protection. You get Flying Toasters, famous fish, Swans and many more. Use your company logo as screen-saving art or leave messages. SOUND PALETTE™ digital sound produces realistic sound effects without additional hardware...howling coyotes, screen munching worms and the flap of toaster wings add a new dimension to screen art. Also, WallZapper™ instantly turns any After Dark displays into wallpaper. New, TRUE COLOR technology provides dazzling VGA and Super VGA graphics. Password security can lock your computer under Windows or DOS. You can even use the same password as your Novell or LANtastic™ network! The System IQ™ task manager monitors system activity, to maximize performance while running After Dark.



BERKELEY SYSTEMS

2095 Rose Street, Berkeley, CA 94709
(510) 540-5535

To order call:
1-800-344-5541 ext. 18

TCP/IP for Windows



Requires only 6KB of base memory
Implemented as 100% Windows DLL
(not a TSR)

- All applications are both client and server
- Works concurrently with Netware, LAN Manager, Vines, etc.
- Up to 64 concurrent sessions

Applications:

TELNET (VT100, 220), TN3270, FTP, TFTP, SMTP Mail, POP2, SNMP, Ping, Bind, Statistics, and Custom

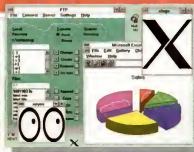
Developer Tools:

Windows Socket, Berkeley 4.3 socket, ONC RPC/XDR, WinSNMP API

For overnight delivery call:
NETMANAGE™
(408) 973-7171

20823 Stevens Creek Blvd., Cupertino,
CA 95014 USA Fax (408) 257-6405

X for Windows



2 for the price of 1
**X and
TCP/IP**
Optimized Pair

Highlights:

- Takes only 10 minutes to install both X and TCP/IP
- Implemented as a 100% DLL (not a TSR)
- Requires only 6KB of base memory
- XRemote, super fast dial-up option

For overnight delivery call:
NETMANAGE™
(408) 973-7171

20823 Stevens Creek Blvd., Cupertino,
CA 95014 USA Fax (408) 257-6405

SNMP for Windows



Extensible SNMP agent for Windows

- Includes MIB1, Workstation, Windows and DOS agents
- Dynamic registration of multiple agents, managers, and proxies
- WinSNMP API developers kit available
- Compatible with any SNMP manager
- Implemented as 100% DLL
- Requires only 6KB of base memory
- Free with NEWT, Chameleon, and Chameleon/NFS

For overnight delivery call:
NETMANAGE™
(408) 973-7171

20823 Stevens Creek Blvd., Cupertino,
CA 95014 USA Fax (408) 257-6405

A COLORFUL BUNDLE

A 600 DPI color scanner with 16.8 million colors and a high resolution thermal color printer both for **only \$1495.00**. Finally, you can add color to your office presentations at an affordable price!

Call for
Details...

612-894-0595

FAX: 612-894-6175

**BOFFIN
LIMITED**

2500 W. COUNTY RD. 42
SUITE #5
BURNSVILLE, MN 55337



Backup All of Your PCs With One Portable Tape System!!

Save precious time and resources with ADPI's portable tape backup system. With the ONE FOR ALL™, you'll save backup time, management time, and drastically decrease media costs. No more lost data or floppy disks to manage. No add-in cards needed, simply "plug in and go" over the Parallel printer port or SCSI port.

- Supports MS-DOS, MAC, UNIX, PICK, NOVELL, and OS/2.
- Easy to use "Windows-Like" menu-driven interface software.
- Small, portable and lightweight.



- FAST! Backup at up to 12 Megabytes per minute.
- 180 Megabyte, 600 Megabyte, and 1.2 GigaByte capacities.
- 30 day evaluations available.

Contact ADPI for
additional Information



Analog & Digital
Peripherals, Inc.
P.O. Box 499
Troy, OH 45373
(513) 339-2241
Fax: (513) 339-0070

Unattached and Available!

"This is a power notebook with a difference."

-PC Direct Magazine 1992

- **Removable Hard Drive Technology** - Security is no longer a problem! Give each person their own hard disk cartridge and share a notebook without sharing data. Also, change sales demo's and OS environments in seconds by just changing the hard drive cartridge.

- **"Seamless" Notebook To Main System Solution** - No more cables and software programs! No more uploading and downloading! With the Intelligent Hard Disk Adapter, just insert your hard disk cartridge from your notebook into your main system.

- **Totally Upgradeable and Expandable** - Upgrade to any of the latest 486 Intel microprocessors and speeds. And, since we use standard SIMM memory modules, you can upgrade to 16Mb of memory.



- **486 Power for under \$1700**
- **One Year Warranty on all Parts and Labor!**
- **Thirty Day Money Back Guarantee**

ComQuest

23 Grand Oaks Blvd, Ste. D
San Jose, CA 95119
800-995-0449

ATS Data Storage Solutions

Featuring the HP 35480 DAT Drive

HP 35480 4mm DAT w/ SCSI-2 Interface

- up to 8 gigabytes with data compression
- 3.5-inch form factor
- 732 Kbytes/sec data transfer rate
- 50,000 hour/MTBF with 1 year warranty and 30-day, money back guarantee

Optional LCD Diagnostic Screen

- Displays current DAT operation
- Displays remaining capacity
- Displays data transfer rate and total data transferred
- Displays DAT compression ratio & ECC
- Allows you to switch between data compression and normal mode

Plug 'n' play with DOS, Novell, UNIX/XENIX & OS/2 operating systems and PC, PS/2, MAC, SUN, HP9000, RS6000 and DEC Platforms. Call (800) 793-8689 to test drive our DAT backup solution for 30 days!

PRODUCT	LIST*
HP 35480 DAT	\$2,395
HP 35480 DAT w/ LCD Screen	\$2,995

ATS
Advanced Technology Systems Inc.
800-793-8689

* Pricing good until 6/1/93



CONTROL ALL YOUR NETWORK SERVERS FROM ONE KEYBOARD AND MONITOR!

With MasterConsole* you can:

- * Plug and play! any combination of IBM ATs and PS/2s (all models) or compatibles, VGA, SVGA or TTL video.
- * Control up to 64 PCs - Servers, Bridges, Gateways using models with 2, 4, 8, or 16 connections. Desktop or 19 Rackmount models.
- * When not working on a PC, set AUTOSCAN* to monitor all PCs, one after another.
- * Insure 100% reliability with keyboard emulation. Error-free PC booting. PC switching. PC access.
- * Add Remote panels for dual access up to 15K ft.

Thousands of MasterConsoles are already in operation throughout the world. GSA approved. See for yourself why no other solution stacks up to MasterConsole.

CALL TODAY!

RARITAN COMPUTER, INC.

10-1 Ilene Court, Belle Mead, NJ, 08502

(908) 874-4072 • Fax (908) 874-5274

FACTORY AUTHORIZED DISTRIBUTOR

American Megatrends
Creators of the World's most AMI BIOS

FCC Class B Bare-bones from American Megatrends!

Now quality US-made American Megatrends motherboards are available as FCC Certified Class B Bare-bones Systems:

- Baby AT w/ ISA 486 Motherboards
- Medium Tower w/ ISA 486 Motherboards
- Large Tower w/ EISA 486 Motherboards

We are the AMI specialist! Not just motherboards: in and out-of-Warranty service, support, accessories (we stock all AMI RAM Expansion Cards), BIOS updates and selected peripherals.

AMI 486SX/DX/DX2 Motherboards:

"Super Voyager"
SX20SX25DX30DX50DX2-66 MHz, 64K Cache (256K opt) Floppy, IDE, 251P on-board \$406/464/495/529/1160

AMI EISA Motherboards:

"Enterprise" 486DX 33/50/66 MHz, 128K Cache, Floppy on-board \$935/1161/1301

"EZ-Flex" Changeable CPU- 486DX 33/50/66 MHz Floppy, 251P on-board \$1312/1707/1985

AMI EISA SVGA Graphics Adapter:

"FastView" 512K/1MB VRAM \$314/372

AMI EISA SCSI Host Adapter:

"FastDisk" Cached Controller (can use 1,4, or 16 MB of SIMM Cache RAM) \$448



WAREHOUSES & COMPANY, DISTRIBUTORS

Pittsford, NY

908-436-6025

716-248-3827

FAX 716-361-7549

MCVISA/ATBANK Surcharge

9-5 Eastern

NETWORK CD's

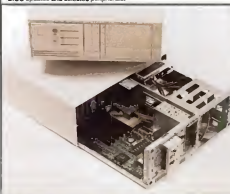
Don't purchase individual CD-ROM Drives UNITL you've seen our CD TowerDrive. We can put up to 224 CD-ROMs on your network!

All CD-ROMs are on-line, full-time to all users on network through proprietary interface.



- Please specify PC or Mac with order.
- Cables included.
- Satisfaction guaranteed.

T.A.C.
P.O. Box 650
Meridianville, AL 35759
(205) 828-6920
Fax (205) 828-6922



COMMANDER



Control up to 96 file servers with one keyboard, monitor and mouse!

- Supports PC, PC/XT, PC/AT, PS/2 and 100% Compatibles
- Switch PCs via keyboard up to 150 feet away
- "AutoBoot™": Feature boots attached computers without operator intervention
- Use either PS/2 or Microsoft/Logitech serial mouse with available cables
- Each unit accommodates from 2 to 8 PCs; cascade up to 12 units



PC-EXPANDER PLUS™



Add up to 7 keyboards, monitors and mice to your PC up to 250 feet away!

- Supports PC/AT, PS/2 and 100% Compatibles
- Selectable privacy modes
- Automatic keyboard and mouse switching
- Microsoft and Logitech serial mouse support available at all workstations



2800-H Bob Wallace Ave. • Huntsville, AL 35805 U.S.A.
(205) 534-0011 • FAX (205) 534-0010
Dealer Program Available Made in USA

IBM, PC, PC/XT, PC/AT and PS/2 are registered trademarks of International Business Machines Corporation. Microsoft and Logitech are registered trademarks of their respective companies.

Avoid the **HASSLE**

You want to put your new PCs to **WORK** as soon as you take them out of the boxes. So, leave the **HASSLE** of PC configuring to us. Purchase any PC, any combination of software and add-on hardware, then leave the rest to us. We will:



Test your systems for faulty components. If a part is defective, we coordinate replacement. All systems undergo 3 rigorous Quality Control checks and a full burn-in.



Install hardware such as network cards, flopticals, gigabyte HDs, CD-ROMs, etc.



Load & optimize all software, including UNIX and OS/2 operating systems. **NEW!** 24-hours, 7 days a week technical support for over 850 software programs. Call for details!



Install Software: \$50 1st package per system,
\$35 each additional package
Install Hardware: \$50 per hour
Initial setup & handling: \$25 per system



Full service PC configuring at direct mail prices!

PC DIRECT SUPPORT, Inc. 800-685-2748
1156 West 103rd Street, Suite 130 Kansas City, Mo. 64114 USA

LCD Projection...

Big Screen Presentation Power

The Image You Project is Everything

- Full 640 X 480 VGA / Mac, VCR Input Optional, High Resolution Panels Available
- Stand-Alone Video/Data Projectors Also Available
- Expert Technical Support, Satisfaction Guaranteed, Or Your Money Back

**BUY
LEASE
RENT**



- Passive Color Panels From **\$1,995**
- Active Matrix Panels From **\$3,395**

Call Now For A FREE Brochure **1-800-726-3599**

Panelight

In San Francisco Call: 415-772-5800 or FAX 415-986-3817
1040 Ferry Building, Box 263 San Francisco, CA 94111

Hours: 9:30 to 5:30 PST 9:30 to 8:30 EST Auth. Distributors for Leading Active/Passive Matrix LCD Projection Panels for PC/Mac/Note/6. & Video: MultiMedia, MC/MSA/MSB/ iForms/1000 & Institutional, PDA, CDD

Turn On Your PC...

Automatically when you call it by modem.

24 Hour Host PC Access At Any Time With Remote Power On/Off

"Turns A PC ON When the Phone Rings and Turns it OFF When the Call is Completed"



10,000
Installed
Users

- Compatible with all Systems, Modems & Software
- 24 Hour Modem or Fax Access without leaving the Host PC operational
- Decrease utility charges
- Reduce equipment wear
- Reduce risk of PC damage due to electrical storms
- Reboot locked up PCs

\$169.00

Server Technology

2332-B Walsh Ave.
Santa Clara, CA
Fax 408-738-0247

Call 800-835-1515 for additional info.

Drive in the Fast Lane

520 MB to 2.0 GB drives for AT, EISA, PS/2
FAST SCSI Performance of 10 MB/sec
5-year standard warranty

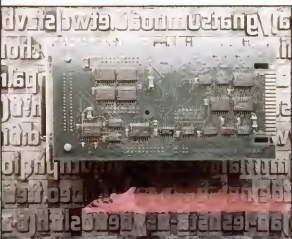
- High drive RPM to reduce access time
- 32-bit bus master controllers
- Up to 35 MB/sec bus transfers
- 17 GB storage capacity in single enclosure
- Mirrored or duplexed FAST SCSI-2 disks up to 40 GB



PERISOD TECHNOLOGY
800-447-8226 408-738-1311 Fax 408-738-0698

Adding PostScript has Never Been **EASIER** or **CHEAPER!**

MUSTANG II, PostScript for HP IIs, IIIs



- 600 x 300dpi Resolution
- 35 Type 1 PostScript Fonts
- 2MB ROM, 4MB RAM on Board
- 25Mhz Processor, Built-in Co-Processor
- PostScript/PCL Auto-Detection and Switching
- **EASY to INSTALL** - Plugs into Optional I/O slot
- **EASY on the POCKETBOOK** - Just \$449 (Sugg. Retail)

\$399
LIMITED TIME



INTERCON®
Intercon Associates Inc.

1-800-422-3880

1870 Winton Road South • Rochester, NY 14618 • 716.344.1260 • FAX 716.473.4387

Utilities



Are You Tracking Your PC's?



Track-It!™ is the complete system for PC management with integrated modules for inventory, auditing, work-orders, purchasing, and more. Multi-user version available.

Now includes **Track-It! Audit!**™ for automatic inventory of PC hardware, software and LAN info.

Discover the secret of countless corporations, schools, hospitals, and government organizations!

Call for FREE DEMO!

BLUE OCEAN SOFTWARE, INC.
16101 Stowe Court, Tampa, FL 33647
(813) 977-4553 Fax (813) 979-4447

CD-ROM



Watch your applications fly with OPTI-CDcache™!



OPTI-CDcache!™ is a CD-ROM caching program that takes advantage of Extended Memory (XMS) to cache CD-ROM data. Data retrieved from a high speed cache instead of directly from the CD-ROM drive significantly improves CD-ROM workstation performance.

All you need is an Extended Memory Manager such as the DOS HIMEM.SYS or that provided with Quarterdeck's QEMM or Qualitas 386MAX or equivalent memory management programs.

ONLY \$89!

Online Computer Systems, Inc.
800-922-9204 or 301-428-3700
Fax us at 301-428-2903
Flash Fax Information Hot Line: 301-601-2120

Application Development



FAST WINDOWS DEVELOPMENT New Version!



Windows MAKER Professional™ - The Industry Standard Prototypist and C/C++ Code Generator for Windows has gotten even better. New architecture uses Switch™ Code Generation Modules for generating ANSI C, MFC C++, OWL C++ code, among others. Design applications by pointing & clicking. Visual Prototypist and embedded dialog box editor lets you test the look & feel and make changes on the fly. TrueCode technology ensures that user code is preserved during code regeneration. Generates the Windows .EXE with fully commented C or C++ source code and production files. CUA & SAA compliant. Incl. Toolbars support. No royalties. Highly recommended.

30 day money back guarantee.

Order Now!
1-800-677-4WIN

Blue Sky Software Corp.
7486 La Jolla Blvd., Suite 3
La Jolla, CA 92037 USA
Tel: (619) 450-6365 • FAX: (619) 450-6366

Utilities



Supercharge Your PC with PC SECRETS™



This comprehensive yet practical guide to optimizing your PC's performance contains two valuable disks of utilities to help you configure, diagnose, analyze, and troubleshoot your system.

- Hundreds of SECRET tips to maintain keyboards, printers, plotters, digitizers, mice, modems, monitors, device drivers, hard disks, and more!

Includes two disks of over 15 ready-to-use utilities, including Qualitas' ASQ, VGATEST, and Modem Doctor!

PC SECRETS by Caroline M. Halliday, Member of the InfoWorld Review Board.
ISBN: 1-678058-49-5. 616 pages, includes two 5 1/4" disks.
\$39.95 USA/\$52.95 Canada, + \$4.00 s/h.

To order, call IDG Books at:
1 (800) 762-2974, 7 a.m. to 5 p.m. PST

IWSW

Networking



Network Hotlink for Windows



Netlogic DDEK lets you move information between applications on a network in real time using the DDE protocol. Ideal for spreadsheet consolidation, client/server applications, financial data feeds, and process control. Works with off-the-shelf products such as Microsoft Excel and on all popular LANs, including NetWare, LAN Manager, VINES, Lantastic, and Windows for Workgroups. Includes a chat application for conversing over the network.

Call today for limited time offer!
1-800-638-0048



NETLOGIC INC.
915 Broadway, New York, NY 10010
(212) 533-9090 FAX (212) 533-9524

System Integration



Micro Managers' Dream Tool



WinBatch combines familiar batch language processing with Windows technology. You get more efficiency plus powerful new capabilities. When you need to show a quick return on your investment in PCs and software, take a serious look at what you can do with WinBatch.

Over 189 functions automate networks, systems, procedures, files, process, security, and client-server data exchange. WinBatch is complete with a dialog box editor, logical tests, file I/O, timed events, DOS file execution, Dynamic Data Exchange, math functions, file locate, file list, and much more. WinBatch Compiler turns WinBatch scripts into stand-alone executable Windows programs for royalty-free distribution, any where. Our single user WinBatch lets power users create, modify, and use batch scripts on their own PC.

WinBatch Compiler \$395 Single user stand-alone; \$69.95 MIS bundle; Compiler + 5 add'l 1/4 single users: \$600.00
1-800-762-3883 1-206-936-1740 Fax: 1-206-935-7129
Wilson Window Ware, Inc. 2701 California SW, Seattle WA 98116

Communications



Tele-Ware® Telecommunications

Engineering/Planning/User Friendly/Smart Software Tools

Integrates The Following Telecommunication Disciplines:

Marketing, Billing, Network Management, Switching, Central Office, Civil, Traffic, Loop Electronics, Outside Plant Engineering, Facilities, Records Integration: Pots Tru (FTTL), Plant (Both Inside & Out) Inventory Records Conversion Management, I & R, Transmission Engineering: Analog, Digital, Fiber: (Asynchronous & Synchronous, Sonet OC-1 thru OC-24 Intra & Local Loop), RF, Cellular, VSAT & End to End Signal Testing and AM/FM Interface: (Auto Cad, Intergraph Micro Station, & Proprietary Systems by way of DXF Files).

For the Domestic And International Telecommunications Market
(1.544 Mbp/s & 2.048 Mbp/s)

SERVING THE FOLLOWING:

LEC's, IXC's, CATV, Cellular, (CAP) Competitive Access Providers, Wireless, Private Networks (Integrated Voice & Data), Governmental Institutions & Vendors: Consultants, Distributors, Equipment Manufacturers, Engineering & E.F.I. Installation Companies

© Copyright 1993

Scenic Design, Inc. • 282 Dogwood Place • Plano • TX • 75075-0819
(214) 423-6890 • fax (214) 423-3049

Flowcharting

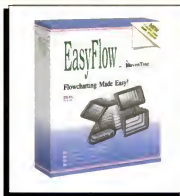
DOS Windows OS/2 LAN Mac

Flowcharting...
faster and easier than
ever before!

HavenTree has cranked up the power on with a release that lets you create your own shapes, offers a host of new text handling features, imports text into your charts, exports charts in a wider variety of graphics formats than any other flowcharting program and supports more printers and plotters than any other DOS-based computer. We've even given our already highly intelligent line ruler an IQ boost. These new and improved features, combined with those listed below, make EasyFlow the World's #1 flowcharter.

- Create your own shapes - **NEW**
- Automatic page borders and numbering - **NEW**
- Automatic text formatting
- Context-sensitive help
- Network ready
- Automatic off-page connectors and adjacent-page mapping - **NEW**
- Charts compatible with EasyFlow Mac version
- Exports charts to ASCII, CGM, DXF, EPS, GEM, PCX, HPGL, SYM, TIFF and WPG file formats
- More color output - HP DeskJet 500C, HP PaintJet, Epson LQ2550
- Runs in **Windows** and **OS/2** DOS sessions
- Tutorial included - **NEW**

Introducing
EasyFlow
8.0
(for DOS)



Call NOW!
1-800-267-0668

HavenTree
SOFTWARE

HavenTree Software Limited
P.O. Box 470-L
Flinckney, NY 13640-0470
Tel. 613-544-6035 Fax 613-544-9632

AD0003-930201

CourseWare

DOS Windows OS/2 LAN Mac

Starter Packs Only \$79



A complete series of over 50 effective, ready-to-teach courses for today's leading PC software packages. Introduction to advanced classes in

Lotus, WordPerfect, Windows plus many more!

Call For Your FREE Catalog
800-829-4ACT

In California: (213) 388-0551
Fax: (213) 388-2842

Accelerated Computer Training, Inc.
3255 Wishnie Blvd., Suite 903
Los Angeles, CA 90010

Communications

DOS Windows OS/2 LAN Mac

Unattended File Transfers
from your MVS or VM System
Outbound for Windows

Designed for MVS, VM, and unattended PCs, Outbound runs on your mainframe—submitted from your scheduler, another program, TSO or CICS—so file transfer is fully automatic and consistently reliable.

- Perfect for negative file transfers, software distribution.
- Supports EXTRAI*, PC/3270, IRMA*, etc.
- Transparent host access to Windows*, DOS and OS/2.
- Secure—users require no TSO or CMS access.
- Uploads or downloads data, programs, reports, and more.
- Installs Windows and Windows applications from your host.
- Executes DOS, OS/2 and Windows commands on remote PCs.
- Wildcards—transfer entire PC directories with attributes.
- Free 30-day trial on your system.

Fronting Computer Company, 480 Green Street, San Francisco, CA 94133
800.825.7228 or 415.398.7228 (outside N. America)

Utilities

DOS Windows OS/2 LAN Mac

Arcadia Workplace Companion
The Personal Information Manager for OS/2

Featuring:

- Clock
- Calendar
- Schedule
- Address
- Phone
- To-do List

The Arcadia Workplace Companion (WPC) is a set of productivity tools designed specifically for the OS/2 2.0 Workplace Shell environment. It adheres to Common User Access (CUA) '90 guidelines and exploits all of the powerful new controls, including notebooks, containers, sliders, value sets and open buttons. Everything necessary to schedule the day's events, keep track of appointments, and manage business contacts is available at the touch of a button.

Call
for
Special
Offer!

Information: (818) 446-6945

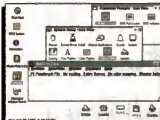
Arcadia
Technologies
Inc.

735 W. Duarte Road
Suite 207
Arcadia, CA 91007
Fax: (818) 447-4212

Utilities

DOS Windows OS/2 LAN Mac

PrntScr™ OS/2 Screen Utility



- Print presentation quality (color or B/W) Windows Shell screens or windows to local or LAN attached printer with a single keystroke
- Capture Workplace Shell screens
- Windows to the clipboard, or to raster file formats: PCX, TIFF, GIF, WPG, PM Metafile, PM Bitmap, Windows Bitmap.
- Superior Clipboard Viewer - Import, Export, View, and Print.
- Convert PM Bitmaps to raster file formats.
- Screen Saver and Date & Time Display.
- Includes Both: OS/2 2.0 (32-bit) & OS/2 1.3 (16-bit) Versions.
- All these features in ONE easy to use utility!
- \$115 + No charge for 2nd day shipping.

or windows to the clipboard, or to raster file formats: PCX, TIFF, GIF, WPG, PM Metafile, PM Bitmap, Windows Bitmap.

Phone: (918) 357-1628
Fax: (918) 357-2869
MITNOR Software
28411 E. 55th Street
Broken Arrow, OK 74014

Mapping

DOS Windows OS/2 LAN Mac

Map Your Marketing and Sales
Strategies with MapViewer

Transform your spreadsheet data into full-color thematic maps. Use MapViewer to:

- Track sales
- Select new business sites
- Assign sales territories
- Plan direct-mail and advertising campaigns.

MapViewer allows you to visualize data that is distributed geographically. Boundary files for the countries of the world, all US states and counties, US Interstate highways, and US 3 digit zip code sectional centers are included with the program. You can import, edit, and create your own boundary files. Produce hatch, density, prism, scaled symbol and pie maps. For a FREE full-color brochure, call

800-972-1021 MapViewer \$249
Golden Software, Inc. Demo disk \$10
809 14th Street Requires Windows 3.0 or 3.1
Golden, CO 80401 USA
PHONE (303) 279-1021 FAX (303) 279-0909 BBS: (303) 279-0910

Connectivity

DOS Windows OS/2 LAN Mac

Discover the X Terminal
Inside Your PC!

X-One software transforms your PC into an X terminal. Access network-based UNIX and VMS applications while using your favorite DOS or MS-Windows programs. Whether you prefer MS-Windows or DOS, X-One comes with both versions in a single package. Other cost-saving features include built-in TCP/IP network software—making X-One an even greater value. X-One is easy to install and use, and is compatible with leading network packages.

Purchase X-One and connect to the world of X Windows!

Call for Demo & Details: (800) 422-2230

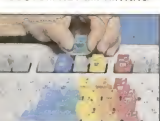


GRAFPPOINT™

1485 Saratoga Avenue • San Jose, CA 95129 • (408) 446-1919; (408) 446-0666

Give your users a real productivity tool!

CUSTOM KEY IMPRINTING



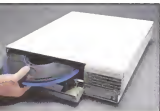
Custom keys printed with color-coded software commands reduce keyboarding errors and eliminate time lost looking up commands in manuals, help screens or pull-down menus!

- Cut Training Costs • Boost Productivity
- Stand Out from the Competition •
- Call for your FREE Catalog!

HOOLEEN CORP.
258 Justin Dr., Cottonwood, AZ 86326
(800) 937-1337

9-TRACK AND 3480

Rock solid solutions for PCs and workstations. Rock bottom prices.



- Exchange data with minis & mainframes
- Reliable, lightweight, compact, 1600 and 6250 bpi 9-track solutions manufactured by Overland Data
- PC solutions include the latest Overland Data controllers and DOS software
- A variety of workstation platforms are also supported

Call now: 800-729-8725

Overland Data Inc. since 1980
619-571-5555 • FAX: 619-571-0882
Europe (+49) 6172-35027 • FAX: (+49) 6172-35028
3480 Now With IDRC!

Stop Your #1 Cause of System Hardware Failures: Power Supplies



System Sentry is a PC card for system monitoring and alerting. Smart on-board communications allows remote management and fault signaling via external MODEM.

- Monitors DC voltages and temperatures.
- Detects marginal power supplies before they fail.
- Monitors CMOS battery level.
- Diagnoses failures by displaying POST codes.
- On-board battery for continuous operation.
- Use with DOS/Windows/UNIX/Novell systems.
- Non-Volatile Memory for event capturing.

JUST \$279.95 (Includes Software)

Berkshire Products, Inc.
2160 Pleasant Hill Rd, Ste A-5165
Duluth, GA 30136

Phone: (404) 271-0088 Fax: (404) 832-0082

BEST BAR CODE READER FOR PC/XT/AT/MACINTOSH ONLY \$295 COMPLETE



The **Uniscan-200** bar code scanning system works with any software and operating system and is Novell-compatible. The **Uniscan-200** reads 5 bar code types.

- Converts Bar Codes to Keyboard Data
- Includes Stainless Steel Wand
- Bar Code Software: Magnetic Stripe Readers & Portable Systems Also available.
- 100% Metal Construction
- Field-Proven Since 1978
- 5-Year Warranty
- 30-Day Money Back Guarantee

1-800-256-5920 FAX: (415) 856-3843
TPS Electronics
4047 Transport St. Palo Alto, CA 94303

CD-ROM Mini Tower

External 4-Bay CD-ROM Tower comes with four high performance-Format CD-ROM Drives, Host Adapter and Cables. Perfect for applications with large database operations.

\$2495⁰⁰

The CD-ROM Tower allows up to 2.7 GB of On-line Data.

Photo CD™ Multi Session Models Available

Optional LAN Software Available
5, 6 and 7 Bay Models Available



BOFFIN LIMITED

612-894-0595

FAX: 612-894-6175

*Registered Trademark of Eastman Kodak Co.

2500 W. COUNTY RD. #2 - #5
BURNSVILLE, MN 55337

How to make money with fax-on-demand

Customers call your Faxcess™, select from hundreds of stored documents, enter their fax number and instantly receive by return fax the information they need to do business with you now...before your competitor's information is even in the mail.



- FAXCESS™ works 24 hours a day uninterrupted. Great for detailed product or customer support information.

- Order today, FAXCESS™ tomorrow. Works out of the box. Nothing else is required. Easy to set up. Callers love it.

- Join the thousands of companies making and saving money with this exciting technology from only \$2495.

For a live on-line demonstration call

800-FAX-DEMO

Request information document 444.

Com/Art International
PO Box 1450 • Lake Forest, CA 92630
(800) COM-ARTS • (714) 859-2000

Your customers dial for a fax to get the facts to buy now.
Free

YOU CAN'T PRINT WHEN YOU'RE OUT OF PAPER!

That's why you need the **Printex PAPER SERVER™** - it holds 1500 sheets of paper and eliminates frustrations caused by an empty paper tray.

FEATURES AND BENEFITS

- Over 3 hours of non-stop printing.
- Improves productivity • Easy to install and operate.
- Electronically controlled for precise, jam-free operation.
- Full 1-year warranty • 30 day money-back guarantee.
- Made in U.S.A.

Printex Technology, Inc.

415-591-8007 1-800-934-3555 Ext. 1044

FAX-O-MATIC™ Plain Paper Fax Receiver



NOW 600 DPI
with LaserJet 4
STILL \$289



TALL TREE SYSTEMS

(415) 493-1980 phone (415) 493-7639 fax

Plug-in 486 CPU Upgrades



- Upgrade most 286 AT Class computers to Cytex 486 SX power. Prices start at \$349.
- Upgrade most 386 DX computers to Cytex 486 SX power at the current clock speed. Prices start at \$199.
- Upgrade most 386 DX computers, 16 or 20 MHz, to Cytex 486 SX power at double the current clock speed. Prices start at \$417.
- Upgrade 386 Compact Desktop and IBM PS/2 Models 70 and 90 to Intel 486 SX, DX, or DX2 power. Prices start at \$585.

1-800-477-8101

PERFORMANCE PURSUIT INC.

Four Embarcadero Center, Suite 3170
San Francisco, CA 94111

YOUR PC CAN READ/WRITE 3480 • 9-TRACK • 8MM • DAT NOW!



- PC/Mainframe Data Exchange
- Data Exchange for IBM AS/400, SUN, DEC VAX, IBM 3480 and others
- Transfer/Backup/Data Manipulation
- Quick Copy™ Tape Duplication
- UNIX Tar and DEC Save Set
- Our Exclusive QuickTape™ Software

Media Conversion Systems since 1973

Call us today at (800) 248-3475

SHAFFSTALL CORPORATION

7901 East 88th Street

Indianapolis, IN 46256

(317) 842-2077 FAX: (317) 842-8294

Get Plain Paper Fax from your Laser Printer

Net FaxPak
from Teledisk **\$299**

- Fax receiver prints faxes on HP and compatible laser printers.
 - Installs easily - no computer required - RJ-11 connectors to fax or voice line, parallel and serial ports to printer.
 - Shares printing with computer or network server (parallel and serial ports).
 - Receives and stores 768K (40 pp) of faxes when printer is off. Battery backup included.
 - Built-in auto voice-fax switch. Shares fax line with fax machines and fax cards for sending faxes.
- Orders: 1-800-669-3700
Fax Orders: (415) 332-0122
3 year warranty, 30 day money back guarantee
Teledisk Systems Inc.



9 TRACK TAPE 3480 CARTRIDGE CONVERSION SYSTEMS



- Systems Conversions Rentals
Read and Write any 9 track tape or 3480 tape cartridge with your PC (DOS/UNIX).
- 9 track tape subsystems:
- 1600 Bpi from \$1395.00
 - 6250 Bpi from \$2895.00
 - 3480 from \$8,995.00
- Call today for the best data conversion systems available.
- (800) 938-TAPE • (702) 254-2648
- Laguna Data Systems
7340 Smoke Ranch Road, Suite C
Las Vegas, NV 89128
FAX: (702) 254-0901

MICRONICS VESA 66



\$2099



Intel Inside Logo is a
Trademark of Intel Corp.

We Can Ship Today!

- USA-Built MICRONICS 486 VESA/66
 - 8MB SIMM Memory: 70ns
 - 213MB Maxtor #7213 HardDrive
 - 1.2 & 1.44 MB Teac Floppy
 - Micronics 32-Bit VESA Video Card
 - High Speed Local Bus Controller
 - Northgate Omnisky ULTRA Keyboard
 - One Year Warranty
- CALL FOR SPECIAL CONFIGURATIONS
3-6 COMPUTERS • 213-466-3636
FAX 213-466-3693

Introducing the ESystem PC Board



- The E Board is a programmable PC board running 24 hours a day. Included:
- E Board • PC Resident Forth Language
 - 6502 Cross Assembler
 - Windows Development Library
 - Examples!
- \$349.95**
- Order now and receive software updates in 1993 for the shipping and handling charge. This offer is good only for a limited time. To Order, please call:
- Highlands Electronics
707-994-1024

BAR CODE READER Only \$299



- The WD-1 scans bar codes using a handheld wand directly into your PC, AT, PS/2, or Macintosh computer. Decoded data is passed into your software via the keyboard interface just as if it were typed on the keyboard. Unit decodes: Code 39, UPC/EAN, Codabar, Code 128, and 12 of 5.
- Options: Bar code slot reader
- Mag stripe card reader (shown) • Handheld laser scanner
- Bar code printing software and portable data collectors also available.
- Complete with HP wand for only \$299
- COMPUTERWISE.**
302 N. Winchester Lane
Olathe, Kansas 66062
800-255-3739 (913) 829-0600
Fax: (913) 829-0810

EXPAND & NETWORK YOUR NOTEBOOK



- Easy-One step connection to Networks, Peripherals, and Mainframes.
- Fast-Bus connection has 10 times the throughput of Pocket Adapters.
- Safe-Use industry standard drives, expansion cards and software.
- Adaptable-Supports most Notebook and Laptop models.
- Upgradable-Swap the interface for future portables.
- Affordable-Prices start at \$299
- Reliable-One year warranty-15 day free trial
- Axonix Corporation
The Portable Peripheral People
1214 Wilmington Ave. Salt Lake City, UT 84106
Phone: 800-866-9797 Fax: 801-485-6204

Communicating with a Higher Intelligence



- PCIAT Four Port Communication Coprocessor
- High Performance 16 MHz 16 bit Microprocessor.
 - 80X86 code compatible.
 - 4 Sync/Async Ports. (2 Ports with Full Duplex DMA).
 - Uses Zilog 85C30, 85230 SCC chip.
 - 512K then 4 Megs of Dual Ported Ram.
 - 8k, 16k, 32k, 64k Windows Size (Programmable).
 - 8 Software Selectable and Shareable Interrupts.
 - RS232C / RS422 / RS485
- Extremely Competitive Pricing.
Call or fax for additional information.
OEM AND DEALER INQUIRES WELCOME.

GMM
GMM Research Corporation

10092 Sky Park South
Unit E, Irvine, CA 92714
(714) 752-9447 Fax (714) 752-7335

GMM Products Are
All Made in USA

9-TRACK TAPE FOR THE PC



- Exchange data between your PC or Macintosh and any mainframe or mini computer using IBM compatible 1600 or 6250 BPI 9-track tape. This unit can also be used for disk backup. Operates at transfer rates up to 4 megabytes per minute. Available in 7" or 10 1/2" reel sizes. Systems include tape drive, cables, and software. Call us today!
- QUALSTAR CORPORATION
9621 Ironton Avenue
Chatsworth, CA 91311
(818) 882-5822

Bar Code Headquarters



Portable Readers

Labeling Software

- For Epson, Oki, IBM, and LaserJet. Any Format.
- On-Screen Label Design, WYSIWYG.
- 16 text sizes - 3" reads at 100"
- Zofis, 128, UPC/EAN, AIAG & Code 39
- Auto-Incrementing, File Input, Logos, symbols
- Reversible, color, soft fonts, Powerful, versatile, fast!
- Rotatable, shiftable, scalable fonts on LaserJet.
- LabelRIGHT™ (for Dat Matrix & Laser) - \$279
- Formats for: K-Mart, Sears, Penneys, Wal-Mart, AIAG, LOGMARS, etc.
- Other bar code Programs from \$129

- Attaches to PC, Mac, Serial Devices and Modems
- Battery operated. Very easy to program.
- 64K - 256K memory
- Bar code or keypad input
- 2x 16 SuperVid LCD
- Real-Time Clock
- Wedge, or terminal
- Program Generator
- 2 Built-in Inventory Programs
- Wand, CCD, or Laser
- Keyboard or Serial Uploads
- Downloaded Labels for Verification
- Simple, Powerful, Versatile, and Easy
- Complete 64K units with Laser Scanner - \$1734
- Complete with Wand - \$739



Bar Code Readers

- for PC, XT, AT, PS/2, Macintosh and all RS-232C Terminals



- Attaches as 2nd keyboard
- No software changes
- Zofis, 128, C39, UPC/EAN, etc.

- Top Rated by Independent Review
- Magstripe, laser, CCD, or wand input
- Complete with Stainless Steel Wand - \$399



Thermal Transfer Printers

- 2" per second Thermal Transfer - Up to 4" wide
- Supports all Popular Bar Codes
- Small Footprint - Light weight (20 lbs)
- Prints Bar Codes, Big Text, and PC Graphics
- Complete with labels, ribbon, cable, LabelRIGHT software, and Fargo Allegro Printer - \$1895

Ordering is Easy!

- Qualified P.O.'s Accepted • Free UPS Blue in the USA
 - 2 Yr Warranty on Wands and Readers
 - Direct From the Manufacturer
 - Same Day Shipping • All Items in Stock
 - Free Phone Support • 30 Day Money Back Guarantee
- In US or Canada Call Toll Free
800-345-4220

WORTHINGTON
DATA SOLUTIONS

3004 Mission Street • Santa Cruz, CA 95060
408-458-2664 FAX • 408-458-9338 Phone

INTEL MATCHED MEMORY CLASSIC is Intel's memory expansion card for the price conscience customer. No board in this price range will outperform or match Intel's quality. Here are some of its features:

- ASIC design gives EMS support in hardware for up to 90% performance over software EMS
- Up to 8MB using 1MB SIMMs — most cost-effective
- Broad compatibility. Works in both 8 or 16 bit expansion slots



\$89

INTEL ABOVE™ BOARD ISA is the fastest classic memory board on the market. Ideal for 286 & 386SX systems. Here are just a few of its outstanding features:

- Up to 32MB mir-e-match 256K, 1MB, and 4MB SIMMs
- Zero wait states in the ISA bus yielding 20 to 30% faster performance
- Most mappable memory available with exhaustive diagnostics
- Advanced EMS 4.0 memory support for 286 based systems
- Single keystroke installation
- I/O option available
- Software bundle of Quattro's 386MAX (\$99 value)
- Broad compatibility. Works in both 8 or 16 bit expansion slots



\$165

INTEL SNAPIN 386™ turns your IBM based 286 into a 386cx system—

- 1.6 to 2x average performance speed up
- Genuine Intel 386SX microprocessor, including advanced memory management access to 386-based (32-bit) software
- Fast 16K direct mapped hardware cache
- Benchmarks show comparable performance to most 25MHz products
- Guaranteed compatibility with IBM AT and PS/2 Models 50, 50Z, 60, 75, 286 and 30 286
- Compatible with Intel 287 math coprocessor
- Easy, 3-step installation



\$189

INTEL ABOVE™ BOARD 2 PLUS—powerful and easy memory expansion.

- Designed expressly for IBM PS/2 Models 50, 50Z, 55X, 60 and 65SX
- Adds up to 8MB using 256K or 1MB industry-standard SIMMs
- Switchless installation. Be up and running in minutes
- ASIC design gives EMS support in hardware



\$109

THE ABOVE™ BOARD MC—the only Micro Channel memory board you'll ever need!

- Designed for both 16- and 32-bit operation. Works with all IBM Micro Channel PS/2s
- Adds up to 32MB using 256K, 1MB or 4MB industry-standard SIMMs for the best value per megabyte
- Engineered for zero wait state performance for fast memory access
- Exclusive EEPROM installation incorporates IBM's latest configuration technology
- Automatically analyzes expanded memory and integrates the board with your system
- Unique ASIC design gives you EMS 4.0 compatibility in the hardware and lightning fast memory mapping



\$195

THE INTEL POWER PACK bundles an Above Board and a Snapin 386. Big savings over products purchased separately! Intel Power Pack is the ultimate way to upgrade your system and save money. Combine special savings and excellent performance and you have the best way to extend the life of your IBM AT, PS/2 Model 50 or 60, 50Z, 25 286 or 30 286 system.



\$447/\$615

up costs have dropped and we're passing the savings to you!

PRODUCT DESCRIPTION	PART NO.	LIST	OUR PRICE
Above Board 2 Plus OK	PSMB5200	\$129	\$109
Above Board 2 Plus 2MB	PSMB5225	\$299	\$264
Above Board MC OK	PSMB5300	\$249	\$195
Above Board MC 4MB	PSMB5340	\$499	\$414
Above Board MC32 for IBM models 70 & 80 OK	PSMB5400	\$ 89	\$79
Above Board MC32 for IBM models 70 & 80 4M	PSMB5440	\$219	\$199
Above Board MC I/O option	PSFP5001	\$99	\$89
Matched Memory Classic OK	PCMB4700	\$119	\$89
Above Board ISA OK	PCMB4900	\$199	\$165
Above Board ISA 4MB	PCMB4920	\$349	\$269
Above Board ISA 4MB	PCMB4940	\$499	\$385
Above Board I/O option	PCSP4901	\$99	\$89
Snapin 386 for IBM AT, PS/2 50/60	PCIB3550	\$249	\$189
25 unit bulk pack	PCIB355025	\$4,975	\$3,998
Snapin 386 for PS/2 50z	PCIB3600	\$249	\$189
25 unit bulk pack	PCIB360025	\$4,975	\$3,998
Snapin 386 for PS/2 30 286	PCIB3700	\$249	\$189
25 unit bulk pack	PCIB370025	\$4,975	\$3,998
Power Pack PS/2 50/60 (4MB)	ABIB3840	\$699	\$615
Power Pack PS/2 IBM AT (2MB)	ABIB3850	\$599	\$467
Power Pack PS/2 30 286 (4MB)	ABIB3860	\$699	\$615
Power Pack PS/2 30 286 (2MB)	ABIB3870	\$599	\$467

**"ALL PRODUCTS INCLUDE
INTEL'S AWARD WINNING
SUPPORT AND WARRANTY!"**

SALES DATA, INC.

Sales Data Inc.

P.O. Box 1688, Hutchinson, Kansas 67504-1688 Voice (316) 665-3710 Fax (316) 665-0793

*Send certified check, money order, Visa or MasterCard. Prices guaranteed until while supplies last. Shipping additional. Above and Snapin 386 are trademarks and Intel is a registered trademark of Intel Corporation. Other brand and product names are trademarks of their respective owners.

BAR CODING

BAR CODE READERS
AMERICAN MICROSYSTEMS
 2190A Regal Pkwy. • Euless, Texas 76040 • (817) 571-9015
FOR PC, XT, AT, PS/2 & TERMINALS:

- No software changes required
- Data appears as keyboard input
- Reads Code 39, 1-2of5, UPC/EAN, Codabar, 128, 93, 11, MSI/Plessey
- Auto-discriminates between codes
- Accepts WAND, SLOT, CCD, LASER, MAG STRIPE

BAR CODE PRINTING SOFTWARE:

- For Epson, Oki, IBM, Dot Matrix and HP LaserJet Printers
- Prints Code 39, 1-2of5, UPC/EAN, Codabar, 128, 93, MSI/Plessey
- Easy to use

DECODER BOX

MAG STRIPE

SLOT (BADGE)

WAND

LASER

CCD

AM EX

(800) 648-4452 • FAX: (817) 685-6332
 30 Day Money Back Guarantee
 One Year Warranty

COMPONENTS

Chip MERCHANT
ULSI Co-Processors
 387SX-2533 \$59 / \$62
 387-33/40 \$65 / \$69

Cyrix Co-Processors
 387SX-2533 \$69 / \$74
 387-33/40 \$79 / \$82

Intel Co-Processors
 287 XL \$39
 387SX-(16-25) \$79
 387-33 \$59

SIMMS/DRAM
 4x8-70/60 \$145 / \$155
 1x8-70/60 (3) \$29.50 / \$31
 1x8-70/60 (9) \$36 / \$37
 1x1-80 \$3.65
 256x4-70 \$3.85
 512 3x (2 MB EISA) \$55.00
 1 x 36 (4 MB EISA) \$120.00
 2 x 36 (8 MB EISA) \$240.00
 4 x 36 (16 MB EISA) \$550.00

HP LASERJET 2/3
 2 MB / 4 MB \$79 / \$135

Prices Refused 3% Cash Discount

CALL (619) 268-4774
Fax: (619) 268-0874
 9541 Ridgehaven Court
 San Diego, CA 92123

SIMMS

1 M x 9 (3) - 70CALL

1 M x 9 (9) - 70CALL

4 M x 9 - 80CALL

4 M x 9 - 70CALL

DEAN
COMPUTERS
INC.Toll Free:
1 (800) 933-3767Prices Subject to Change without notice.
Simms 12+, Minimum Order \$100--Look for the Seal you
can trust and
buy with confidence.

No one offers you more helpful PC buying information than InfoWorld. Take advantage of our expertise.

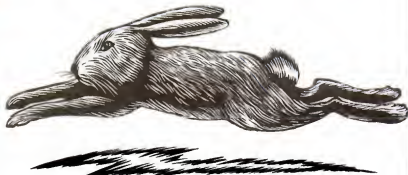
Look for the InfoWorld Buyers Assurance Seal on product packaging in your local computer stores or in advertisements.

It's the stamp you need to buy with confidence.



COMPUTER SYSTEMS/HARDWARE

**NOW BACKPACK
IS SMALLER.
AND FASTER.**



We've just made it easier to backup your hard drive with our 250 MB parallel port tape backup unit. One model works with all PC compatibles and portables.

Here's why:
Backpack is easy to install.
Plug Backpack into the parallel printer port. Then plug the printer into Backpack!
Backpack requires no cards.

Backpack is 30% smaller (1.5" h x 4" w x 7.75" l).

Backpack is easy to transport and share between computers (2.5 lbs).

Backpack can backup at a speed of up to 9 MB per minute.

Backpack is a QIC 80 compatible and can read QIC 40 tapes.

Backpack is available in 3.5" and 5.25" diskette, tape and hard disk models.

So don't get left in the dust. Call for more information today. Micro Solutions, 132 W. Lincoln Hwy., DeKalb, IL 60115, 815-756-3411, FAX: 815-756-2928



backpack
MicroSolutions
 Computer Products

ROM BIOS UPGRADES
AMI-MR. BIOS-PHOENIX
STARTING AS LOW AS \$29.95

MEMORY

LASER MEMORY FROM \$60.00
MEMORY FOR PCs & LAPTOPS

MOTHERBOARDS

286-386-486 FROM \$90.00

FREE CATALOGS FREE CHIP PULLER FREE TECH SUPPORT

1-800-541-1943

TECHNICAL SUPPORT USA INC. AREA 005 YOB
 286 & 386 IBM PC VOLUME DISCOUNT
 1000 VENTURA CA 94043 PC'S WELCOMER
 800-535-7441 FAX 800-535-7441

Repeat a good thing

with an InfoWorld Reprint. Favorable reviews of your products or company have a big impact on sales. Reprints come in 8 1/2 x 11, tab and post card size. Get the details Call Ellen Markoff at (415) 312-0521.

EDITORIAL INDEX

Miscellaneous	
AirPort PowerBook	
communication upgrade package	48
Editing Ease Suite trade-in	34

Network Applications	
AltisMail	41
GatorLink System, Release 1.1	41
GatorShare EX AppleShare-to-NFS	
gateway software	41
GatorShare for the	
GatorStar OS and GatorStar GX	41
OptiServer	48
PMDF, Version 4.2	45
PMDF Fax	45
PMDF Message Router	45
SyncPro Connection Management System	44
Worldatalk 400M/Modem Mail gateway	41
Xpress Librarian 2.0	48

Network Hardware	
BaseModem	48
Cisco 4000 router	44
Cisco FDDI router	44
EtherWorks Turbo 16-bit Ethernet cards	48
High Speed Line Driver module for LAN	48
IMC LANrepeater Modular Anyway	48
Interphase EISA and SBus adapter cards	41
LatitCell 10104 Switch	44
Pacific Directnet print server card	44
PrintLink transmitter	48
Pro-Val SCSI card	41
Retix 4900 remote bridge/router series	48
SBus Synchronous Optical	
Network (SOWAT) NAD adapter card	44
SmartLAN/ATP module	48
Xylex 3310 Concentrator	41
Xylex 3310 FDDI-to-Ethernet bridge	41
Xylex Network 9000 FDDI-to-Ethernet module	41

Network Management	
LatitCell Network Management	
Application	44
SmartMon	41
SystemBrook snap-in router	
control modules	41
TecScan II/TecScan III network management package	41

Peripherals	
ComStation docking station	31
Hiper Plus for CD accelerator card	31
PrintStation docking station	31
Radius Intelliscor Display20 monitor	34
Storage Solutions SSI-2000 disk drive	34
Trend Windows NT boards	34

Printers	
Canon bubble-jet printer line	34
Canon dot-matrix printer line	34
Dumas dot-matrix printers	34
QMS 4525 Print System	30

Productivity	
Clientette 2.7	17
Comel 1.0	17
Images Incorporated II	18
Mathcad 4.0 for Windows	17
Nisus 3.4 for the Macintosh	18
Platinum Publisher	17

Systems	
Aquiline NT433C notebook computer	29
Datellite pen systems	30
Del ValueStation multimedia line	29
NEC 3310 notebook line	29
NEC UltraLite Versa notebook line	29
NuTek One Mac-compatible system	29
PoquetPad Plus notebook system	31
Poquet Pro Plus notebook system	31
Unigen CTOS SuperGen (SG) system line	34

Tools	
Capsule Services	18
DOS/16M, Version 5.0	17
Fortran PowerStation 1.0	17
Global Access for PC	18
MediaWorks	24
PC Tools for Windows	18
Realtime Vision	18

ADVERTISING SERVICE REGIONS

Steven Drace
Director of Demographic Operations
(415) 572-7341

**Northern California
Pacific Northwest**

Joe Kenner
VP Western Advertising Director
Jan Davis
Sales Administration Manager
Alec Dewar
Regional Manager/No. Calif.
Kelly Nader
Account Manager/No. Calif.
Ron Hall
Regional Manager/
No. Calif. & Utah
John Masi
Account Manager/
No. Calif. & Utah
Steve Moylan
Regional Manager/
No. Calif. & Washington

Michael Hamilton
District Sales Manager/No. Calif.,
Washington, Oregon & Utah
Kelli Flanagan
Account Manager/
No. Calif. & Washington
155 Bove Road, Ste. 300
San Mateo, CA 94402
(415) 572-7341

**Southern California,
Los Angeles, Santa Barbara**

Karen Niss
Regional Manager
Debra Wright
Account Manager
11855 West Olympic Blvd., Ste. 1055
Los Angeles, CA 90064
(310) 412-8018

**Orange County
& Colorado**

Dawn Proenke
Regional Manager
Susan Engler
Account Manager
18009 Sky Park Circle, Ste. 145
Irvine, CA 92714
(714) 250-1305



Central

Renee Hicks
Regional Manager
Shelia Humrich
Account Manager
14055 Dallas Parkway, Ste. 304
Dallas, TX 75240
(214) 233-3498

Southeast

Jim Shannon
Regional Manager
Mindy Christie
Account Manager
1400 Lake Hearn Drive, Ste. 330
Atlanta, GA 30319
(404) 394-0758

New England

Vicki Gonn
National Accounts
Director/Regional Manager
Tania Howe
District Sales Manager
Lusanne Newman
Account Manager
4 Chrysler Road
Hartford, MA 06180
(508) 620-7750

Mid-Atlantic

Ian Ross
Eastern Advertising Director
Roseann LaBruno
Sales Administration Manager
Joanna Parker
Regional Manager
Cindy Zuk
Regional Manager
Christine Lewandowski
Account Manager
Florence Mahesh
Sales Support Coordinator
365 West Passaic St.
Rochelle Park, NJ 07662
(201) 587-0090

**Special Editions
& InfoMarket**

Diane Tempini
National Advertising Director

UPCOMING IN INFOWORLD

386 and 486 Color Notebook Computers

March 22

Since we last looked at them in June 1992, the number of color notebook PCs available has exploded. InfoWorld's editors survey the field, comparing products from ALR, AST, Compaq, Sharp, and several other leading manufacturers. Looking at color notebooks with both passive matrix and active matrix screen technology, we will run a battery of our own and BaPco PC benchmarks, including CPU, disk-intensive, and multi-tasking tests. We will also report on keyboard and screen display quality, battery life, documentation, and technical support.

Document Publishing Software

March 29

Desktop publishing in the enterprise goes far beyond data sheets, brochures, and newsletters, and so do the publishing packages designed for creating large-scale, complex documents. In a cross-platform comparison of the very high-end products required to publish big documents such as books, manuals, and corporate reports, InfoWorld looks at FrameMaker, DocWrite, and Interleaf, with a sidebar on XSoft's modular family of publishing products. We will see how each package performs such large-scale publishing tasks as gathering data from various sources, automatic cross-referencing, generating tables of contents and indexes, and version tracking.

E-mail with Novell's MHS

April 5

Following on our last October on E-mail and X.400 gateways, InfoWorld assesses how well various E-mail packages communicate with each other via Novell's MHS. We will find out which special features survive the translation over MHS and assess how difficult it is to compile and manage user directories when supporting multiple E-mail packages using MHS. E-mail packages covered will include BeyondMail, ccMail, Da Vinci, Futurus Term, Microsoft Mail, QuickMail for Macintosh, Microsoft Mail for Macintosh, Sun's Unix Mail Tool, and WordPerfect Office.

Application Development Programs

April 12

These tools let people build custom applications mostly by moving and linking objects on-screen. To arrive at a task-oriented comparison, the InfoWorld Test Center staff will use four different packages to build the same application and assess how easy they are to use and how well they "shield" the user from having to write additional code. The products tested will be Visual Works for Windows from Parc Place Systems, Microsoft's Visual Basic for Windows, Parts Workbench from DigITalk, and Series Corp.'s Series Developer Pro.

InfoWorld is a publication of International Data Group, the world's largest publisher of computer-related information and the leading global provider of information services on information technology. International Data Group publishes over 178 computer publications in more than 55 countries. Thirty million people read one or more International Data Group publications each month.

ADVERTISER INDEX

Apple	56-57
Apple Direct	32-33
AST	10-11
Borland	44-45
Chinn	52
Compaq	42-43
CompuShare	44-45
Computer Bowl	87
Corel	53
Crosslink	40
DATA LINK	50-51
DeL	35-82-83-112
Digital Equipment Corporation	27
Securelink	40
Fujitsu	89
Gateway	14-15
Hayes	27
Hewlett-Packard	30-31
In Focus	78
Intel	78-79
Interleaf	15-16
Knowledgeware	49-77
Lenmark	9
Lotus	22-23-66-67
Microcom	5
Microsoft	19-46-47-70-71
NEC	62-63
Nel	2
Nortage	90-91
Peripherals 93	93
Practical Peripherals	93-94
QMS	26
Sharp	26
Spectrum Spectrum	38
30 Vision	30
Traveling Software	111
VemCom	36-37
WordPerfect	13-15
Xerox	25
XSoft	25

This index is provided as a service.
The publisher assumes no liability for errors or omissions.

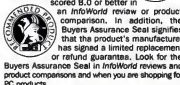
Subscribing to InfoWorld: A one-year subscription to InfoWorld costs \$130 for subscribers in the United States and \$145 in Canada. Call (800) 457-7886 or (708) 647-7925. Subscriptions to InfoWorld are available in Europe for a price of \$150 per year. By special arrangement, copies are sent by air freight to and redistributed from London, with arrival generally within three days of publication date. For more information, contact Parley Gordon, Westwood House, Elmhurst Road, Goring-on-Thames, Reading, RG9 9BN England. Telephone: (44) (0) 491-875386. Facsimile: (44) (0) 491-875524.

InfoWorld on CD ROM/On-line: You can now get full-text of InfoWorld News and Reviews on CD-ROM. Specific clients are granted by Internet for users through the Copyright Clearance Center (CCC), provided that the base fee of \$3.00 per copy of the article, plus \$5.00 per page is paid directly to Copyright Clearance Center, 27 Congress St., Salem, MA 01970. Please specify ISSN 1099-6549. Permission to photocopy does not extend to other articles. For more information, symbol: 1. InfoWorld can also be purchased on 35mm microfilm from University Microfilms, Periodicals Dept., 300 N. Zeeb Road, Ann Arbor, MI 48106; (313) 763-4700.

Reprints: Send all requests to Permissions Editor, 155 Bove Road, Suite 300, San Mateo, CA 94402.

Photocopy Rights: Permission to photocopy for internal or personal use, or the internal or personal use of specific clients is granted by InfoWorld for users registered with the Copyright Clearance Center (CCC), provided that the base fee of \$3.00 per copy of the article, plus \$5.00 per page is paid directly to Copyright Clearance Center, 27 Congress St., Salem, MA 01970. Please specify ISSN 1099-6549. Permission to photocopy does not extend to other articles. For more information, symbol: 1. InfoWorld can also be purchased on 35mm microfilm from University Microfilms, Periodicals Dept., 300 N. Zeeb Road, Ann Arbor, MI 48106; (313) 763-4700.

Buyers Assurance: A standard for assuring customer satisfaction with PC products, the InfoWorld Buyers Assurance Seal is awarded only to those products that have been evaluated by our on-site Test Center and Review Board and received a satisfactory or better score in every test category. The exclusive Recommended Product seal is awarded only to those products that have met the standard criteria and scored 9.0 or better in an InfoWorld review or product comparison. In addition, the Buyers Assurance Seal signifies that the product's manufacturer has signed a limited replacement or refund guarantee. Look for the Buyers Assurance Seal in InfoWorld reviews and product comparisons and when you are shopping for PC products.



NT / from page 1

NT server edition to get remote access

\$500 — with upgrades from Windows 3.1 costing less than \$300 — while the server version will cost significantly less than \$5,000, Walker said.

Also to be included in the server bundle are disk mirroring, disk duplexing, and RAID Level 5 support, Walker added.

Additionally, both the server and desktop versions of Windows NT will bundle 32-bit versions of MS Mail, Schedule Plus, and Network Dynamic Data Exchange (NetDDE). Both versions will also feature automatic detection and configuration of network adapter cards, as well

as a multiple boot capability that will allow NT to be installed on the same system with DOS and OS/2 1.x and 2.0.

Positioned as an enterprise server, the Windows NT Advanced Server also will provide support for a distributed security model and centralized systems management features.

Microsoft has also developed, "from scratch," a 32-bit replacement for the DCA/Microsoft Comm Server, called SNA Server, which supports symmetrical multiprocessing.

The final Windows NT beta is expected to reach test sites in

the next week or two, said Paul Maritz, senior vice president of systems. A total of 75,000 betas are planned to go out.

This beta will feature complete and have most of the final performance tuning done, officials said.

One well-placed source told *InfoWorld* that Microsoft plans to give free copies of the desktop version to buyers of the Advanced Server.

Microsoft has also launched an intensive effort to train 25,000 systems integrators, developers, corporate accounts, and resellers by the time NT ships and is setting up a certification program for resellers.

— *Ed Scannell contributed to this story.*

BACKLOG / from page 1

Large vendors stung by backlog

every day," said Matt Fitzsimmons, a ComputerLand dealer in White Plains, N.Y. "It is beginning to affect the plans of end-users."

Meanwhile, despite the shortages, IBM and Compaq continued to dump fuel on their raging fire of price wars, with both companies making substantial cuts on products, even those that are backlogged.

Companies such as Hewlett-Packard Co. and Digital Equipment Corp., which sell through fewer channels and can meet the demands of users, stand to gain significant market share over the next few months, observers said.

The cause for the shortages cannot be blamed this time on the lack of chips from Intel Corp. — with the possible exception of the 486DX2 — or a components shortage.

Poor planning, opening up too many new distribution channels at once, or not understand-

ing the supply and demand dynamics of selling low-cost systems are probably causing the shortages, analysts said.

"I don't think any of the big guys know what they are doing in the low end," said Bill Bluestein, senior analyst with Forrester Research Inc., in Cambridge, Mass. "It is outside the scope of the traditional computer pricing and marketing studies," he added.

IBM is apparently the most backlogged, with an average wait of six weeks for shipments on some ThinkPads and most 486-based PS/2s and ValuePoints, dealers added.

Speaking last week before a gathering of consultants in Orlando, Fla., Robert Corrigan, president of IBM's PC Co., admitted his firm is three to four weeks behind in shipping systems to dealers on some PS/2s and ValuePoints and even further behind on some ThinkPads.

An IBM representative de-

clined to predict when shortages would ease, but said the company is doing all it can to keep up with demand.

Some popular models of Compaq's Deskpro, the product line targeted toward corporate users and sold through dealers, are under constraint until April, the company said.

Some of Apple's newer models, such as the Centris line, will be in short supply until the third quarter, Apple said.

The latest round of price cuts has extended last year's price wars, analysts said.

"No one is letting up in the pricing war until the cheap clone guys start exiting the market in big numbers," Bluestein said. "They aren't going to compete on service and support until that happens."

Last week, Compaq cut prices for its entire product line, including printers, by between 15 and 20 percent.

IBM announced cuts on its desktop systems of as much as 20 percent.

— *Cate Corcoran and Steve Pollack contributed to this story.*

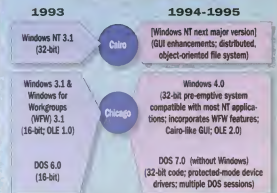
per second, you begin to understand just how fast this is," Williams noted.

Both the bandwidth of the bus is broken up between different nodes operating simultaneously, the QuickRing architecture should make massive data transfers possible without the need for extensive and expensive additional shielding for the PC.

Other important considerations involved in developing the bus were that it needed to be backward compatible with existing systems and that it didn't add a lot of additional cost to the systems.

Both of those objectives have been met, according to Williams. Existing NuBus and processor-direct slot-equipped Macs will be able to work with the new QuickRing add-in cards, while the cost of implementing the chip set on QuickRing cards will be less than \$40, he added.

Windows, DOS will evolve into Cairo and Chicago



Microsoft disclosed part of the plan for how its systems will evolve over the next few years. Sophisticated features will migrate to lower level systems.

WINDOWS / from page 1

Windows 4 to leave DOS in the dust

or descriptions of items rather than file names. It will also make the network "transparent," said Paul Maritz, senior vice president of systems, to attendees at the conference.

Chicago will actually result in two separate systems offerings — DOS 7 and the next version of Windows, which will not need DOS to run, Maritz said. Microsoft chairman Bill Gates referred to the product as Windows 4 at the conference.

"What we are doing is taking Windows and building it out into a full operating system so this release of Windows will not technically require MS-DOS," Maritz said. "[Windows 4] has a complete environment built into it so the file system, device drivers, etc., are all native 32-bit code integrated with the Windows kernel."

Windows 4 will be targeted at 4-megabyte PCs and at a market that Microsoft executives called "personal Windows," meaning the product is not intended for mission-critical computing or downsizing.

It will support the full Win32 application programming interface that will be available in

Windows NT, including pre-emptive multitasking, and will have a user interface that is similar if not identical to Cairo's.

DOS 7, a spinoff from the Chicago project, will not have 32-bit internals but will have 32-bit programming interface.

"We have lost control of DOS to the marketplace," Maritz said. Developers have taken advantage of so many of DOS' 16-bit features that moving to a 32-bit API is virtually impossible, he explained.

"We will take a lot of the Chicago technology and package that up as DOS 7, which means we'll have 32-bit device drivers as well as the ability within DOS to run multiple DOS sessions," Maritz said.

Officials repeatedly said the two projects would emerge from Microsoft's development teams in 1994. Last December, company officials said Windows 4 would be available in 1994.

Microsoft's Gates also said the company is offering to license NT's Win32 API to third parties to port to the Apple Macintosh and to Unix to provide a Windows-compatibility layer for applications.

MS-DOS / from page 1

DOS 6 to be introduced for under \$100

million consumers with the reseller promotion and special pricing on three of its leading software products: Microsoft Office for Windows 3.0, MS-DOS 6.0, and Microsoft Windows 3.1.

Special prices for Office, DOS, and Windows run concurrently with the reseller promotion scheme that offers users a free upgrade of their choice for every \$350 spent on Microsoft software between April 1 and May 31.

In a press release distributed last week, Microsoft Office 3.0 was the only product that carried a suggested price — \$569. Word, PowerPoint, and Excel users will receive a coupon good for a \$50 rebate. No price was listed for DOS or for the Windows 3.1 upgrade.

The long-awaited DOS 6.0 upgrade will include integrated disk compression, memory management, backup, and antivirus protection, Microsoft said.

APPLE / from page 1

Bus technology is Apple's multimedia ace

width of QuickRing into multiple units, 16 different nodes on the system will be capable of sending 200 megabytes per second (Mbps) across the bus at one time, sources said.

The QuickRing architecture is being developed as an addition to Apple's existing NuBus and processor-direct technology, meaning that existing Macs can take advantage of the technology.

QuickRing will put Apple in a position to deliver on the promise of true multimedia on the desktop. The company plans to introduce a series of multimedia-dedicated desktop systems and image servers this year, with third-party developers expected to produce a host of add-on cards using the QuickRing chip set, sources said.

QuickRing's components in-

clude a chip set developed by Apple and National Semiconductor, with interconnect logic designed by Beta Phase.

According to sources familiar with Apple's plans, the QuickRing bus and cards are scheduled to be introduced to the public by the third quarter of this year.

The 64-bit asynchronous bus will operate at a base speed of approximately 300 MHz, said Rod Williams, an independent consultant coordinating the three companies' efforts. As many as 16 nodes will be able to simultaneously deliver streaming data — such as that associated with digital video — at rates of 200 Mbps.

"When you compare the bandwidth of QuickRing to something like Ethernet with a data transfer rate of about 200K

REVIEWS / TEST DRIVES

FIRST LOOK / from page 1

PC Tools hits the jackpot in Windows shell game

rently got set up. Most of the familiar Norton tricks for optimizing your screen space are in PC Tools, such as displaying a group of programs as a toolbox to allow double-click access to all your applications in a minimum of real estate.

I quickly organized a half dozen additional "virtual" desktops, and, in just a few days, I'm certain this PC Tools feature has paid me back in time saved. I also need a high-resolution monitor because I now have instant access to six times more screen area.

For example, you could create a desktop for a monthly budget forecasting session including an icon for the spreadsheet that contains actuals plus projections, your administrative assistant's database of known invoices and projected expenses, and your electronic mail icon so you can tell your manager the forecast is finished. You can also set up other desktops for, say, a speech you have to make, a project you're managing, etc.

If there is a particular application you use all the time, clicking on it with the right mouse button lets you select its "tag-and-go" property so the program follows you to any desktop you visit.

That quick right-mouse-click access to a pop-up menu of available actions for any item exemplifies PC Tools for Windows' marvelous efficiency. If you prefer a more visual and direct user interface, you can use drag-and-drop support for moving files, scanning viruses, printing, viewing, and other actions.

All desktops are customizable, right down to the toolbar of icons for common actions. And you can collect groups of desktops into custom "offices." Network administrators will especially like the capability to completely customize desktops, determining what level of server, di-

rectory, and file access is allowed and which of the PC Tools utilities are included at what level of functionality. The program handles network installation seamlessly for either local or server residency.

The other strength of PC Tools for Windows resides in the power and elegance of the individual tools, which include SmartFind, Backup, File Viewer, Anti-Virus, Scheduler, and (at last) a truly useful scripting environment for recording and playing back keystrokes and mouse movements or for writing scripts that manipulate various Windows applications without the trap of screen location dependency.

None of the program's tools requires you to exit to DOS, although you may find that you have to exit Windows to repair disk problems.

The File Manager in particular is flexible and fast, letting you work quickly through well-organized menus and dialogs, right-click access, and even drag-and-drop invocation of such functions as the print shell.

Although PC Tools for Windows is the best shell and utility collection I've used, it is far from perfect. It fails to achieve the elegance of more intuitive shells such as the Macintosh desktop.

But Central Point has laid the groundwork for a truly impressive Version 2.0 of this program by putting a database between its unique organizing structures and the anemic underpinnings of DOS.

You can make PC Tools for Windows look a bit like the Mac with a fair amount of work. Unlike on the Mac, where every file comes up on the desktop as an icon and the folder structure is the directory structure, PC Tools for Windows forces you to create and maintain desktops

manually. For example, if you move or delete an executable file associated with an icon, the desktop loses track of it.

Moreover, PC Tools for Windows 1.0 will prove confusing for novice users or those moving over from the Mac due largely to inconsistencies in the visual metaphor, which all go back to a disconnection with the underlying operating system.

For example, you can't have files appear in a desktop folder by saving them to a subdirectory, even though a subdirectory is represented in the PC Tools File Manager as a folder. In other words, a PC Tools for Windows desktop folder is not the same as a PC Tools for Windows File Manager folder because a PC Tools folder is not a DOS subdirectory.

You can make a particular subdirectory of files available on a specific desktop by dragging that subdirectory's folder icon from the File Manager onto the desktop. But the subdirectory icon changes to a File Manager icon with its path name underneath. As a result, the subdirectory is no longer a folder full of icons, and it's not as clear that you can launch the files listed by name therein just as you do the file icons in a folder, by double-clicking. This means the desktop folder is a rather limited device for organizing

because you have to drag new items into it after you save them. And yet I'm sure future versions of PC Tools for Windows have

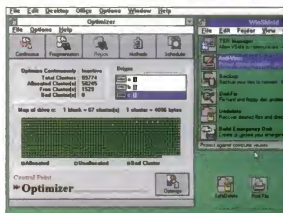
a chance to surpass the Mac desktop partly by taking advantage of the underlying database.

Version 1.0, for example, includes file folder icons marked with alphabetical subdivisions. Today, you must manually move a file beginning with "A" into the "A" folder and move it again to the "File" folder when you rename the file. Given the underlying database structure, there's no reason Central Point couldn't create folders smart enough to be associated with a subdirectory and find a few "filing" automatically.

You can also expect to find some features in future versions that are missing from Version 1.0, such as the capability to perform a file transfer via serial, parallel, or network cable.

Central Point Software, in Beaverton, Ore., can be reached at (503) 690-8090.

Kewin Strehio is InfoWorld's executive editor of reviews and testing. First Look examines new products before they have been through a formal review.



Central Point's PC Tools shell offers backup, security, data protection, and optimization without leaving Windows.

FONT PROGRAM

SuperATM simulates fonts but doesn't match original quality

BY GALEN GRUMMAN
REVIEW BOARD

The explosion of typefaces being used by average business people has caused an unintended side effect: mismatched fonts. But Adobe Systems Inc.'s SuperATM alleviates this problem.

SuperATM (\$149) works with a variant of PostScript designed by Adobe, called multiple master, which can be manipulated by software to resemble other typefaces. SuperATM uses its multiple master format, which includes two fonts (a serif and a sans serif) to simulate on the fly almost any font in the Adobe library. This lets you view and print fair approximations of the originals without having the fonts on your Macintosh.

SuperATM doesn't eliminate the need for fonts on your system. Often, the program's simulated font output won't match

the originals due to the multiple master format SuperATM uses. For example, the sans serif font Avant Garde has a hollow 'a'. Unable to simulate this character, SuperATM refers to multiple master's sans serif font, which puts a bar through the middle of the 'a'. (Other exam-

ples are illustrated in the chart below.)

SuperATM comes with a font database including most Adobe typefaces and several popular TrueType faces, so the program knows what the originals look like in order to simulate them. (PostScript typefaces from oth-

er vendors can't be simulated.)

You can also generate bit-map fonts for a couple of dozen popular Adobe typefaces. This speeds up SuperATM because it doesn't have to create these fonts on the fly. An accompanying CD ROM includes bit maps for more than 1,300 Adobe

typefaces.

SuperATM worked well, recognizing and simulating most PostScript fonts. But the program did slow down my system especially when loading or beginning a print job.

SuperATM is easy to use. It's an .app that works automatically once installed. An ATM icon appears to let you know that the program is working. And SuperATM puts a diamond after all font names that it creates.

However, not all applications support multiple master or SuperATM's font substitution. If you're working with older versions of some popular software (e.g., Microsoft Word, Aldus PageMaker, and QuarkXPress), you'll need updates. Applications with which SuperATM is incompatible simply will not display the substitute fonts.

Adobe, in Mountain View, Calif., can be reached at (415) 961-4000 or (800) 83-FONTS.

Comparing SuperATM output to the real thing

Original font output	SuperATM output
15-point Times Ten	15-point Times Ten
15-point Times New Roman PS	15-point Times New Roman PS
15-point Melior	15-point Melior
15-point Gill Sans Ultra	15-point Gill Sans Ultra
15-point Bodoni Poster	15-point Bodoni Poster

UTILITY SOFTWARE

Gazelle's Q-DOS Collection provides arsenal of utilities

By TOM BIGLEY REVIEW BOARD

Gazelle Systems Inc., well known for its variety of stand-alone DOS utilities, has gathered together several of its best into a single package — the Q-DOS Collection — for \$179. In it you'll find just about everything you need to handle the day-to-day operations, protection, and maintenance of your system.

Q-DOS 3, the heart of the program, is file and directory management utility (*a la* XTree Gold, PC Tools' PC Shell, and Korabaki's 1DIR) that lets you find, move, copy, view, edit, erase, and un-rase files. Q-DOS 3 makes disk reorganization a breeze, providing all the tools you need to manipulate directories, including rename, prune, and graft. The program supports Novell and other DOS-compatible networks.

Q-DOS 3 makes disk reorganization a breeze.

The second big gun in the Q-DOS Collection is Back-It-4, Gazelle's backup utility. Offering speed, features, and automation similar to those in competing backup programs, Back-It shines when it comes to hardware support. The only drawback to this program is that it lacks an automatic configuration utility.

The OPTune disk maintenance and performance utility combines the functions of Gibson's SpinRite, Norton's DiskDoctor, and Central Point's Confess into a single program. OPTune can check your system and correct any logical errors. This utility can also thoroughly test your disk's surface and, if you have an MFM or RLL drive, refresh its low-level format and adjust the interleave for peak performance. Also, OPTune's file optimization function eliminates file fragmentation and lets you decide how to organize your files to ensure speedy access.

There's also a virus scanner — PCscan — that can detect and remove more than 100 known viruses.

Q-DOS includes a few nifty extras. Q-Len is easy to use and gives you quick access to the Q-DOS utilities and your applications, and it also offers password protection.

Fast, a disk cache utility, can dramatically speed up many of your applications. ZFormat is a handy memory-resident copy formatter that supports as many as four floppy drives, claims twice the speed of DOS Format and better reliability, and is available via a hotkey combination from within most DOS programs. And with the G-Edit text editor, which can run from within Q-DOS or from the command line, you can edit as many as five files at once and use its hex mode to edit text files.

Gazelle Systems, in Provo, Utah, can be reached at (800) RUN-FAST.

SPREADSHEET ADD-IN

Open EIS Pak eliminates macros

By JOHN WALKENBACH
CONTRIBUTING EDITOR

Microsoft Corp.'s Excel has always been one of the most customizable spreadsheets available. Its macro language lets an application developer create custom dialog boxes, change the menu system, insert on-screen buttons to automate procedures, and basically control what the user can and cannot do within an application.

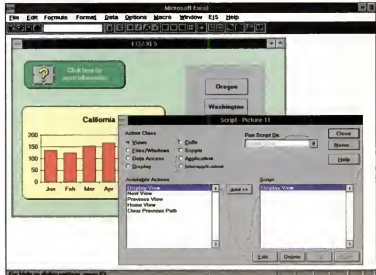
Microsoft's \$99 Open EIS Pak takes this customizability to new heights by allowing Excel users to create an Enterprise Information System (EIS) application without writing macros.

EIS applications typically consist of several views of one or more worksheets; controls and menus for navigating the views; and tools for easily accessing charts, what-if scenarios, summaries of remote data tables, and even other Windows programs. The goal is to let end-users employ the application to access and manipulate information with little or no training.

The applications you develop can include data from external database files and other Windows applications via Dynamic Data Exchange (DDE) and Object Linking and Embedding (OLE).

Open EIS Pak consists of several add-in files for creating user-oriented applications that use Excel 4.0 as a front-end and let you add navigational controls, create custom menus, display prompts, and assign links to other applications.

To make the controls perform your desired tasks, you attach scripts you've created to selections from a dialog box. Excel



Microsoft's Open EIS Pak builds applications that let end-users access and manipulate information, such as charts.

then converts the English language scripts to macro language. This eliminates much of the testing and debugging that normally accompanies manual macro coding.

A key element of any user-oriented system is keeping users from slipping out of or missing up the application. This capability alone makes Open EIS Pak worth the price of admission.

I only have two complaints. First, Open EIS Pak doesn't relieve the developers from having to use the relatively clumsy

stand-alone dialog box editor to develop full-fledged multioption dialog boxes. But the variety of controls available eliminates much of the need for custom dialog boxes.

Second, while you are developing an EIS application, the screen redraws itself every time you make a change. Fortunately, these excessive redraws do not take place when the finished application is actually running.

Microsoft, in Redmond, Wash., can be reached at (800) 227-4679.

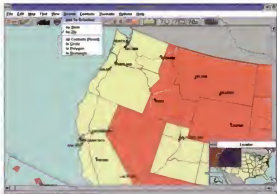
MAPPING SOFTWARE

MapLinx provides data mapping for Everyman

By PATRICK MARSHALL CONTRIBUTING EDITOR

It may seem like a stretch to call software with a \$399.95 list price "inexpensive," but anyone who's shopped for a thematic mapping program will probably do a double take when they see MapLinx for Windows Professional by MapLinx Corp.

This easy-to-use program lets you display contact, sales, demographic, and other data on a map of the United States. The program can handle data in dBase and Act for Windows file formats, which means you can also bring in data from most spreadsheets simply by saving the file in DBF format.



MapLinx for Windows Professional makes it easy to do ranged fills of your data at the state level or by ZIP codes.

MapLinx provides 16 different viewing levels, so you can zoom in on cities nearly down to the street level. The program also lets you switch on or off displays of U.S. ZIP code boundaries, more than 23,000 cities, and every major highway.

MapLinx lets you add your own annotations (site names, notes, etc.) to maps. In addition, it lets you display both point data and thematic data from outside files. You can, for example, create ranged fills showing average income levels in each state or even in each ZIP code region.

You can specify up to four different types of data points at a time, each with a distinct symbol. You can also display up to three different ranged fills.

MapLinx does, however, have some limitations. Unlike the higher end programs, such as MapInfo, MapLinx doesn't let you work in multiple layers, creating and deleting map objects at will. And, though it will display thematic ranges of outside data, MapLinx won't actually make computations so that you can see the interactions of data. In fact, MapLinx doesn't even provide an editor for making changes to outside data files.

Also, MapLinx doesn't let you create new maps or change projections, so you'll have to settle for its selection of maps and zoom levels. For example, I couldn't get a zoom level that showed only the state of Washington. And, because MapLinx uses the Lambert Conic Conformal projection, the maps that came close showed the state at a sharp angle that reflects the Earth's spherical shape.

If all you want to do is display data geographically in rather simple ways, this program is classy, easy to use, and relatively inexpensive. MapLinx Corp. also offers a "light" \$149.95 version of the program that does not contain ZIP code boundaries.

MapLinx, based in Plano, Texas, can be reached at (214) 231-1400.

Eubanks: Borland would like to see me go to prison

For sheer drama, there's nothing that beats the *Borland/Symantec trade secret dispute*. Recently, the saga came to another head as Symantec CEO Gordon Eubanks and Gene Wang were indicted on 33 felony counts for allegedly stealing trade secrets while Wang was a Borland employee. The case has created an uproar in the computer industry regarding hiring practices and electronic mail privacy. Even Bill Gates felt compelled to comment on the goings on, saying, "The industry is rallying behind Gordon," and "It is almost unbelievable that Borland is taking the case to this extreme and with this much zeal."

Faced with six years in prison if found guilty, Eubanks is unequivocal in asserting his innocence. Shawn Willett, InfoWorld's business writer, caught up with Eubanks at the Windows Summit conference last week, where Eubanks gamely sprinkled his speech with references to the possibility of going to the Big House.

InfoWorld: I've heard that you plan to argue that your right to privacy was violated by going into E-mail.

Eubanks: You will have to talk to our lawyers specifically on our strategy—I don't think it is right for me to talk about that before the trial. But, the privacy issue has never come up.

The point here is that we said clearly that we're innocent of any crime. There are no criminal trade secrets involved. And that's what this is about. The district attorney has said he wants to test how the law should be interpreted. It's frightening to me to have 30-some felony indictments trying to put people in prison as a test of anything. It just doesn't on the surface seem logical.

InfoWorld: How much of your time are your defense plans taking?

Eubanks: It's maybe taking 10 percent of my time. I just work a little longer each weekend. It's having really no material effect on running the company. The biggest demand on my time (and I don't mean this in a negative way) is talking to the press, which I think is important.

InfoWorld: Still, defending yourself on felony charges must be a distraction. How will you fight that factor?

Eubanks: It really isn't much of a distraction. It's far less of a distraction than doing an acquisition. It's like some event that occurs and I manage it. We have superb counsel. We meet every other week at my house in the evening.

But the company itself isn't distracted. The company is pretty motivated. We expect a lot out of people, but the team is hanging together.

InfoWorld: There must be some personal impact. It isn't every day that a software CEO is indicted on felony charges.

Eubanks: Sure, this is scary. Borland would like to see me go to prison—that scares me. I didn't commit a crime. I don't want to be a test case for some interpretation of the law. It scares me. I certainly think about it, but I think one of our real strengths at Symantec is a strong management team.

You are asking the same questions the board is asking, and the answer is that things are fine. And the board is 100 percent behind the management team. There is absolutely no intention of mak-



ing any changes.

InfoWorld: Is this suit getting in the way of doing business with Borland?

Eubanks: One of the things I've said at company meetings is that we're not at war with Borland. I don't expect employees to hate Borland or stop associating with Borland employees. We have spouses who work at the two companies. This is a battle with some senior man-

agers of Borland who think that Gene Wang and I should go to prison.

InfoWorld: Up to now, you have been fairly tight-lipped about the whole issue. What changed?

Eubanks: Our first reaction was to really study it and understand what happened. And then the next step was to work very hard to resolve a business dispute, which is what this really is. But since Borland and the DA wanted to take it in this direction, we've begun to get much more aggressive in communicating our perspective.

InfoWorld: So, on a personal level, was it like getting arrested? Did the come to the office and handcuff you?

Eubanks: No. The court asked us to pick a time that was convenient for us and that's when we did it. Now, the court was a circus! There were television cameras and lots of people taking pictures, and when I looked up, a bunch of defendants wearing leg irons were led in. They filled up the jury box with these guys in leg irons. That was scary.

InfoWorld: Obviously you don't want to go to jail. If you were offered a plea bargain in which you just had to pay a penalty, would you take it?

Eubanks: I'm innocent. I haven't committed a crime, and I intend to vindicate myself in court. That's my focus, my lawyer's focus. We've never had a single discussion along those lines. I've been in business a lot of years and made some mistakes. But I'll tell you one thing: I did not commit a crime.

Notes From the Field / Robert X. Cringely

Life is a beach until you find out that someone is reading your E-mail

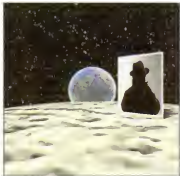
Two consecutive weeks in Southern California have changed Pammy into a sun goddess and me into a cheapskate. While she frolics in the surf wearing an outfit that is a testament to minimalist art, I keep waiting for the next expensive dinner to hit my personal credit wall. How many dishes will we have to wash?

And what do we get for all this money? Not much. Checking into the La Costa resort in Carlsbad for last week's Windows Summit, Symantec CEO Gordon Eubanks thought the hotel service was so bad that being booked by the police was more fun.

IMBALANCE OF TRADE. And Gordon ought to know, having been recently booked after indictment for allegedly stealing Borland trade secrets.

What I find wild entertaining about this Symantec/Borland case is that the supposed trade secrets were transferred by E-mail, leading to a debate throughout the industry over E-mail policies.

Should the company respect the privacy of E-mail? The company and who else? Any company with a network has system administrators who can read anything they want. Any hardware or soft-



ware company has dozens of other clever technical people, many freshly arrived from places where cleverness is valued and ethics nearly unknown.

Naturally, a company should have a policy against anyone snooping around, but let's get real; if you are negotiating the sale of your nuclear weapons designs to Serbia, E-mail isn't the way to do it.

So the real indictment against Eubanks and Wang was that they had no better sense than to do what they did over E-mail. Eubanks, at least, used to be a competent techie.

BORN TO RAISE HECK. I'm not going to get too graphical here, being a command-line kinda guy, but Pammy's new swimsuit seems to have only a front.

"It's a thong," she said, as if this means something to me. "The back is there, but you just can't see it."

Do not expect this type of suit to be popular with Microsoft's FoxPro development team, who are reportedly committed to having the word Access tattooed on their butts if the Windows database gets more than 50 percent market share.

Much as I would enjoy seeing a spectacle like this, I urge the Fox Professionals to squint hard at Microsoft's claimed 750,000 Access units shipped to date. Information from the Software Publishers Association suggests that the real numbers are around 375,000.

STUFF THAT DOESN'T WORK. "You should get a new swimsuit, Bobby," Pammy urged to no avail.

"Sorry, I buy only from the Maginot line."

Other hardware we'll be waiting a long time for includes IBM ThinkPad docking stations. There is only one prototype so far—the part number that

people have been ordering is for the discontinued NL-50 and won't work with the ThinkPad.)

IBM is also having severe A: drive problems on its ValuePoint machines and has even started replacing 3½-inch drives with 5¼-inch.

Hardware that people don't seem to want these days comes from Zcoss where a friend of mine sent back two machines over a three-day period and got Returned Merchandise Authorizations that were 700 numbers apart.

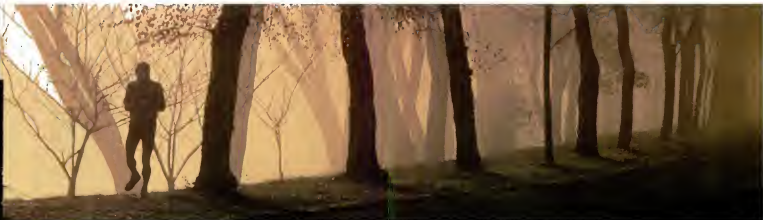
Software we won't hold our breath for includes CoreDraw for the Mac, which won't be ready until Apple ships QuickDraw GX.

Oracle's ODBC drivers are delayed too, and betas don't include SPX support. That means no ODBC access to Oracle 7 NLMs.

And don't even get me started on Chipsoft's (TurboTax, MacIntTax) Speed-File electronic tax filing option. Right now it's slower than filing by U.S. Mail.

Send money, or at least call me with an industry secret at (415) 312-0555; fax (415) 326-0326; MCI:CRINGE, or cring@infoworld.com.

GOLDEN GATE PARK AT 5:30 IN THE MORNING IS A
STRANGE PLACE TO BE TRANSFERRING DATA,
SYNCHRONIZING FILES AND BACKING UP 60 USERS.



Well, not really. Not with fully automated LapLink® V, the newest, smartest, most powerful file transfer solution available. LapLink is at work even when you're not. With its new SmartXchange™ recorder and scheduler LapLink will



Wherever you go

Synchronize feature. No more hassles with different versions of files on your computers. And with LapLink V you're better connected than ever. You can transfer files by cable, modem, or peer-to-peer



Maximum security

when it comes to security, LapLink V knows who has clearance — even down to the directory level. If the name LapLink still makes you think of laptops and colored cables, you're in for a major surprise. To find out how you can make time for

automatically backup and transfer files, or connect with a remote computer. For quickly updating files and directories, LapLink is equipped with an intelligent

over a Novell® network in DOS or Windows.™ What's more, since LapLink runs in the background under Windows it's always ready to send or receive information. And

that morning jog for just \$169.95, call us today at 1-800-472-8654.

LAPLINK® V
by TRAVELING SOFTWARE

New Version - LapLink Owners Call for Special Upgrade Pricing



YOU'LL SWEAR IT RUNS ON JET FUEL.

The fileserver on the right was recently tested against the one on the left for data throughput on a 32-user Novell® network.

While the Compaq Prosignia with IDA-2 managed a 170.92 overall score, the Dell® SE/DSA SCSI-2 scored an unbelievable 411.43.

Over twice the throughput.

Frankly, we were surprised we didn't come out even faster.

Considering that we had a rather unfair advantage.

We call it the Dell SCSI Array. The DSA, for short.

It delivers up to 140% more performance than

Compaq's IDA-2 drive array, thanks to advanced technology

including an i960® RISC processor and two SCSI-2 channels on the controller. And the more drives you add, the better the throughput.

But the Dell SE/DSA server isn't merely fast; it has the storage expansion capabilities to go with that speed.

You can expand up to an amazing 8.16GB on a single SE chassis. And add external media systems to go all the way up to a phenomenal 57.12GB.

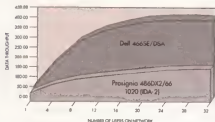
The Compaq Prosignia with its IDA-2 drive array, by comparison, can support up to a paltry 3.06GB.

And that's not the only thing that'll make you want to swear.

Let's say your server goes down, for instance.

YOU'LL SWEAR.

While companies like Compaq can take up to 48 hours to get you up and running, Dell offers an



optional 4-hour rapid response.* We even have a unique Self-Maintenance Program for clients who have their own service organization.

So call us today. And get a fileserver you'll be mad about. Instead of mad at.

DELL™

800-627-8650

WHEN CALLING, PLEASE REFERENCE #11UG5

HOURS: 7AM-9PM CT MON-FRI, 8AM-6PM CT SAT, 10AM-3PM CT SUN
IN CANADA, CALL 800-668-3021 IN MEXICO CITY, 228-7811



*Testing independently audited by Bounds, Chastain and Pharr. For detailed test results call TechFax at 1-800-950-1329. *Service arranged by Leasing Group, Inc. *On-site service provided by BancTec Service Corporation. Optional 4-hour service available in 17 major metropolitan areas. On-site service may not be available in certain remote areas. The Intel Inside logo is a registered trademark and i960 and i860 are trademarks of Intel Corporation. Novell is a registered trademark of Novell, Inc. Dell has various proprietary names in the market and names of others. ©1993 Dell Computer Corporation. All rights reserved.